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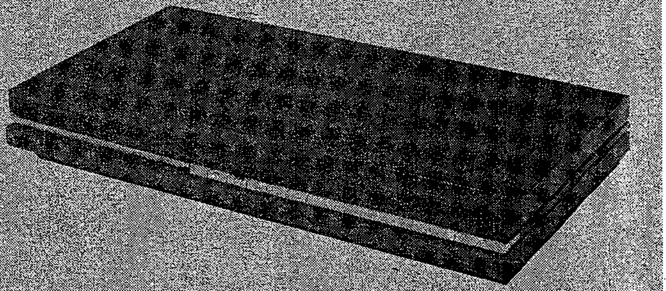

Beocord VX5000

Type 4530, 4532, 4533,
4537, 4538

VX 5500

SERVICEANVISNING
SERVICE MANUAL

Bang&Olufsen

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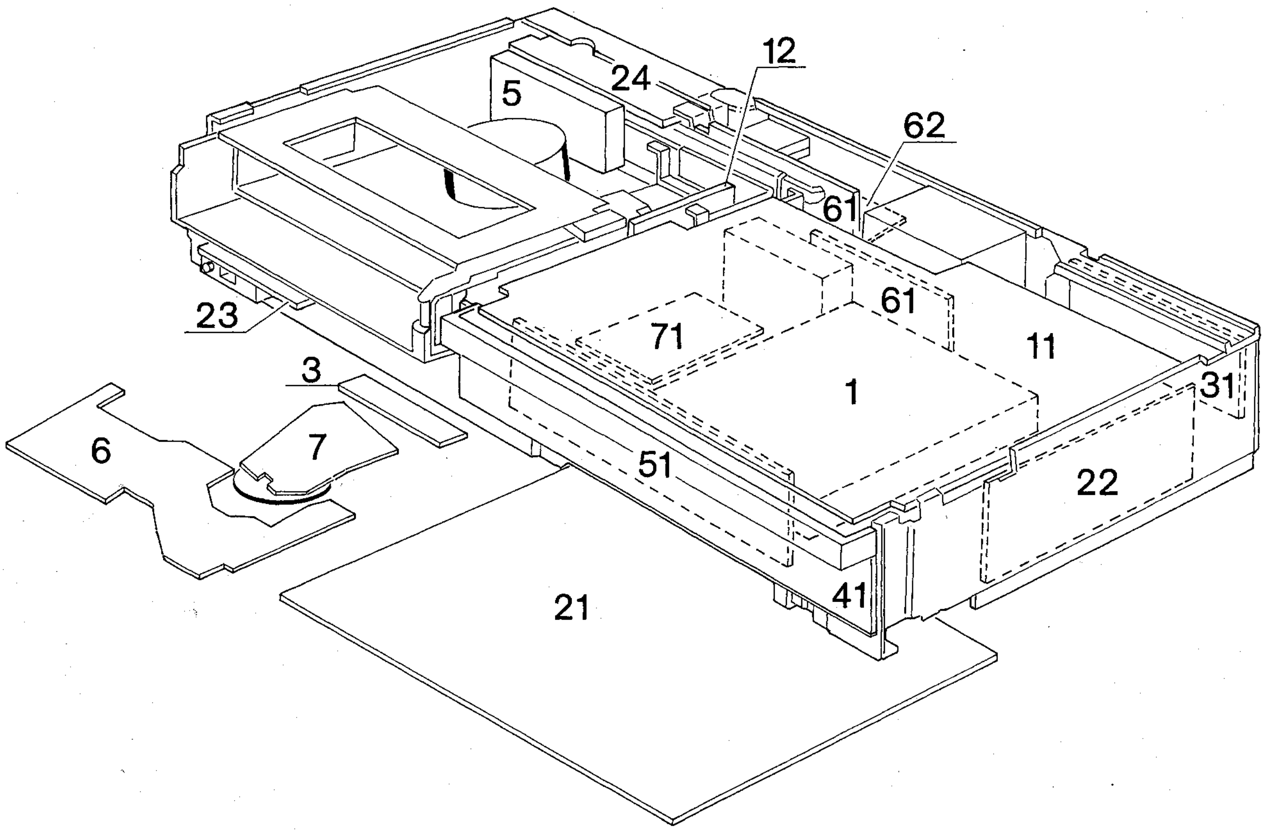


TECHNICAL SPECIFICATIONS	
Beocord VX5000	**Type No. 4530/32/33/37/38**
Cassette format	VHS
Tape heads	3 video, 2 Hi-Fi audio
TV channels	VHF band 46-300 MHz
	Hyper band 300-470 MHz
	UHF channels 21-69
Number of TV programmes	99
Play channel	UHF 37 (adjustable 30-39)
Sound, compatible normal/Hi-Fi	Stereo, Hi-Fi sound
Decoder TV stereo	A2 built-in (Not in type 4532/38)
Decoder bilingual sound	A2 built-in (Not in type 4532/38)
Max. playing time, audio/video	4 hours, E-240
Max. playing time, audio only	8 hours, E-240
Fast forward and rewind	Approx. 6 min. E-240
Counter	Tape counter, remaining time
Time programming	8 programmings up to a year
Slow motion video tape	Variable speed
Still picture video tape	Noiseless
Still picture TV program	Digital
Search forward	5 x normal speed
Search rewind	5 x normal speed
Index search	Track no., digital picture index
Tape speed VTR	23.39 mm/sec.
Tape speed ATR	11.7 mm/sec.
Recording system	HQ
Frequency range black/white	2.5 MHz
Signal-to-noise ratio luminance	47 dB
Signal-to-noise ratio chrominance	Amplitude modulation 38 dB
	Pulse modulation 50 dB

Hi-Fi sound IEC/DIN:	
Frequency range within +4 - -10 dB	20-15,000 Hz
Dynamic range	>80 dB
Distortion	<1%
Channel separation	>46 dB
Wow and flutter	<0.015%

Other data	
Power frequency	50 Hz
Consumption in stand-by	26 watts
Placement, min. height	22 cm
Dimensions W x H x D	54 x 8.5 x 30 cm
Weight	9.1 kg

Accessories	
Included	Aerial cable 6271134
Included	■ A/V cable 21 pin 1.5 m 6270493
Additional price	VPS module 8004770
Additional price	Sound converter 6.5 MHz 8003391
Additional price	Sound converter 6.0 MHz 8003400
Additional price	IR sensor 8915500
Additional price	Beolink 1000 8930130
Additional price	Table/shelf 3084, 3085, 3077

■ The supplied AV cable is according to the new AV norm (IEC 933-1).
If an AV cable according to the old norm is used, hum and cross-talk may occur.

Type No.	4530
Colour system	B/G PAL/● SECAM EAST modified
Power supply	220 volts
Consumption in normal use	64 watts

Type No.	4532
Colour system	I PAL
Power supply	240 volts
Consumption in normal use	58 watts

Type No.	4533
Colour system	B/G PAL/● SECAM EAST modified
Power supply	220 volts
Consumption in normal use	64 watts
VPS	Built-in

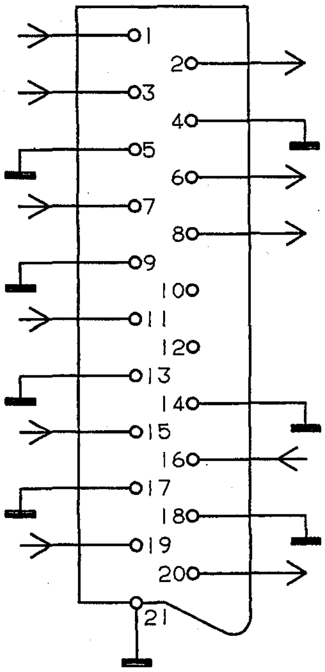
Type No.	4537
Colour system	B/G PAL/● SECAM EAST modified
Power supply	240 volts
Consumption in normal use	64 watts

Type No.	4538
Colour system	I PAL
Power supply	200 volts
Consumption in normal use	58 watts

● SECAM modified: survey

Colour system	Carrier	Conversion principle	Fed to tape
PAL (B/G)	4.43 MHz	Subtract from 5.06 MHz	627 kHz
SECAM (L) standard	4.406 MHz 4.250 MHz	Divide by 4 Divide by 4	1101 kHz 1062 kHz
SECAM (B/G) modified	4.406 MHz 4.250 MHz	Subtract from 5.06 MHz Subtract from 5.06 MHz	654 kHz 810 kHz

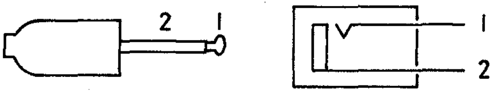
AV & DECODER



Pin 1	Audio R out 0.5V RMS ≦ 1 kΩ
Pin 2	Audio R in 0.2V to 2V RMS ≧ 10 kΩ
Pin 3	Audio L out 0.5V RMS ≦ 1 kΩ
Pin 4	Audio ⊥
Pin 5*	Blue ⊥
Pin 6	Audio L in 0.2V to 2V RMS ≧ 10 kΩ
Pin 7*	Blue 0.7Vpp 75Ω
Pin 8 (AV)	Data
	Play voltage: Logic 0=0 to 2V
	Logic 1=9.5 to 12V
	R out ≦ 1 kΩ
	R in ≧ 10 kΩ
Pin 8 (DECODER)	Play voltage only
Pin 9*	Green ⊥
Pin 10	Not used
Pin 11*	Green 0.7 Vpp 75Ω
Pin 12	Not used
Pin 13*	Red ⊥
Pin 14*	Blanking ⊥
Pin 15*	Red 0.7 Vpp 75Ω
Pin 16*	Blanking
	Logic 0=0 to 0.4V
	Logic 1=1 to 3V
	R out 75Ω
Pin 17	Video out ⊥
Pin 18	Video in ⊥
Pin 19	Composite video out 1Vpp ±0.2 Vpp 75Ω
Pin 20	Composite video in 0.5-2 Vpp 75 Ω
Pin 21	Shield

*** Not in DECODER connector**

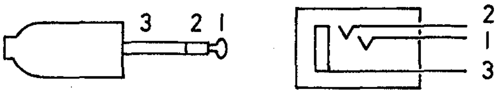
CAMERA PAUSE



Ø 2.5 mm

Pin 1	0 to 1V (Active low)
	I source ≧ 0.1 mA
Pin 2	⊥

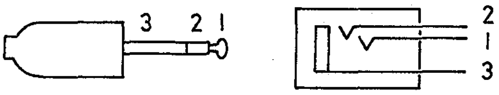
REMOTE SENSOR



Ø 3.5 mm

Pin 1	5.5V ±1V
Pin 2	AV Data codes in
Pin 3	⊥

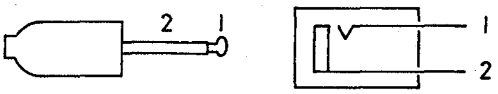
HEADPHONE



Ø 3.5 mm

Pin 1	Left out 400 mV RMS/30Ω
Pin 2	Right out 400 mV RMS/30Ω
Pin 3	⊥

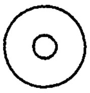
MICROPHONE



Ø 2.5 mm

Pin 1	AF in 0.7 mV RMS/600Ω (0 dB)
Pin 2	⊥

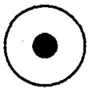
AERIAL



0.5 – 50 mV/75Ω

Max. input 50 mV (only 1 channel)

RF OUT



1.4 – 5.5 mV/75Ω

Adjustable from channel 30 to 39
Adjusted to channel 37 from the factors

Loop-through gain 3 ±3 dB

Subject to change without notice

EXPLANATION OF DIAGRAM

Component print and coordinate system

The largest PCBs have component prints and a coordinate system on both the print and the component side.
On the diagrams every component has a coordinate number. This indicates in which coordinate on the PCB the component is situated. The coordinate numbers are written in smaller print types than the position numbers.

Control Circuit

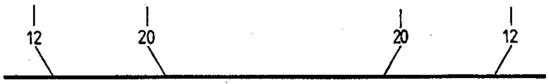
In certain control circuits the active mode is indicated by a function term or by an abbreviation. This may be e.g. $\overline{\text{ST.BY.}}$ = low in the stand-by mode or ST.BY. = high in the stand-by mode.

Wiring Connections

The wiring connections on the diagrams are assembled in 'bundles'. The individual wires are provided with one of the following codes:

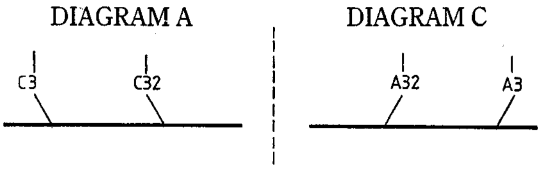
INTERNAL CONNECTION ON ONE DIAGRAM PAGE

Internal connections on a diagram page are indicated by a number. The bend of the wire indicates in which direction the other end of the wire is found.

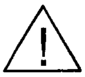


CONNECTION TO ANOTHER DIAGRAM PAGE

A connection to another diagram page is indicated by a number as well as by a letter of the diagram to which the connection leads.



SYMBOL OF SAFETY COMPONENTS



When replacing components with this symbol, components with identical part numbers must be used. The new component must be mounted in the same way as the one replaced.

ABBREVIATIONS LIST

	2X	Double
	3.58 MHz	Colour sub carrier (for NTSC)
	4.43 MHz	Colour sub carrier (for PAL)
A.	A.DUB	Audio dub
	ACC	Automatic colour control
	ACK	Automatic colour killer
	ACKGT	Acknowledgement
	ADC B-Y	Analog to digital converted B-Y signal
	ADC R-Y	Analog to digital converted R-Y signal
	ADC Y	Analog to digital converted luminance signal
	ADD	Adder
	ADDVH	Adding vertical/horizontal sync.
	ADRS	Address
	AFC	Automatic frequency control
	AGC	Automatic gain control
	ALC	Automatic level control
	AMP	Amplifier
	APC	Automatic phase control
	ASBL	Assemble (phase matching)
	ATR	Audio tape recording
	AUX	Auxiliary
B.	BATT	Battery
	BFP	Burst flag pulse
	BG	Back ground
	BG	Burst gate
	BGP	Burst gate pulse
	BH	Power supply for selecting VHF high band
	BL	Power supply for selecting VHF low band
	BLK	Blanking
	BM	Power supply for selecting VHF mid band
	BPA	Burst pulse amplifier
	BPF	Band-pass filter
	BS	Power supply for selecting VHF super band
	BU	Back-up
	BU	Power supply for selecting UHF band
	BUF	Buffer amplifier
C.	C.	Chroma
	C.BLANK	Chroma blanking
	C.FG/CFG	Capstan frequency generator
	C.FREE RUN	Capstan free run
	C.MEMORY	Counter memory
	C.PAUSE	Camera pause
	C.RESET	Counter reset
	C.REVERSE	Count reverse
	C.SYNC	Composite synchronizing signal
	C/R	Capacitor/resistor
	CA	CAV
	CAPST	Capstan
	CAS	Column Address Strobe
	CATV	Cable TV
	CCD	Charge couple device
	CH	Channel
	CHAR	Character
	CM	Communication
	CMD	Command
	CMPX	Colour multiplex
	COM	Common
	COMP	Comparator
	COMP-EXP	Compander-Expander
	COMPE	Compensator
	COMPO	Composite
	CONT	Control
	COUNT	Counter
	CST	Cassette
	CTL	Control Track Pulse
	CTRL	Control
	CYL	Cylinder
D.	D.REF30 (25)	Delayed reference 30Hz (25Hz)
	D.SW30 (25)	Delayed switching 30Hz (25Hz)
	D.V.E	Digital Video Effect
	D/A	Digital-to Analog
	DT/OE	Date transfer/output enable
	D/W	Dark/White
	DAB	Digital to analog blue
	DAR	Digital to analog red
	DAY	Digital to analog luminance
	DDC	Direct-Drive cylinder
	DEEMPH	Deemphasis
	DEFEAT	Suppress
	DEMOD	Demodulator
	DEMPX	Demultipleser
	DET	Detector
	DFSR	Detection field sync read
	DFSW	Detection field sync write
	DISCRI	Discriminator, detector
	DISP	Display
	DL	Delay Line
	DN	Down
	DO	Dropout
	DOC	Dropout Compensator
	DRAM	Dynamic random access memory
	DRV	Drive
	DWC	Delayed write clock
E.	EA-ROM	Electrically alterable read only memory
	ECL	Emitter coupled logic
	E-E	Electronic-to-Electronic
	EMPH	Emphasis
	EN	Enable
	ENBL	Enable
	EQ	Equalizer
	EXT	External

F.	F.ADV	Frame advance
	F.FWD	Fast forward
	FB	Feed back
	FF	Flip flop
	FG	Frequency generator
	fH	Horisontal frequency
	FM	Frequency modulation
	FRAME ADV	Frame advance
	fsc	Sub carrier frequency
	F-V	Frequency-to-voltage converter
	FWD	Forward
G.	GEN	Generator
H.	HD	Horizontal drive
	HDR	Horizontal drive for reading
	HDW	Horizontal drive for writing
	Hi-Fi	High Fidelity
	HLT	Halt
	HP	Head phone
	HPF	Highpass filter
	HPL	Highpass limiter
	HSS	Horizontal sync. separator
I.	I/O	In/Out
	ID	Identity
	IF	Intermediate frequency
	INC	Row counter increment
	INDI	Indicator
	INHI	Inhibit
	INT	Internal
	INV	Inverter
	IR	Infrared Rays
	IRT	Instant recording timer
K.	KIE	Key input enable
L.	L/R	Left/Right
	LC	LCD
	LCD	Liquid crystal display
	LIN	Linear
	LM	Loading motor
	LOG	Logarithm
	LPF	Lowpass filter
	LV	Level
M.	M	Main or Master Microprocessor
	M.BRAKE	Main Brake
	M.CUT	Monitor Cut
	M.STATE	Mechanism State
	M.STOP	Memory Stop
	MEM	Memory
	MEM ON	Memory ON
	MEM VIDEO	Memorized video
	MEM SW	Memory switch
	MIX	Mixer
	MM	Monostable Multivibrator
	MO	Mode
	MOD	Modulator
	MPX	Multiplex
	MPX VIDEO	Multiplexed video
	MULTI	Multi picture
N.	NF	Negative Feed Back
	NL	Noiseless/Noise Limit
	NORM	Normal
	NR	Noise Reduction
O.	O/E	Odd/even field
	OKE	Output key enable
	OSC	Oscillator
	OSD	On-Screen Display
P.	PB/PLAY	Playback
	P IN P	Picture in Picture
	PIF	Picture Intermediate frequency
	PIX MOVE	Picture move
	PLL	Phase locked loop
	POS	Positive
	POSIT	Position
	POWER CONT	Power Control
	PROG	Program
	PROTECT	Protector
	PWM	Pulse width modulation
R.	R.CH-UP	Remote Channel-up
	RAS	Row address strobe
	RC	Reading clock
	RCC	Reading clock clear
	RCR	Row counter reset
	REC	Record
	RECT	Rectifier
	REF	Reference
	REF30	Reference 30Hz from servo circuit
	REG	Regulator
	REJ	Rejector
	REL	Refresh control
	REV	Reverse
	REW	Rewind
	RF	Radio frequency
	RFF	Read flip flop
	RM	Reel motor
	RMT	'Remote' µP
	RMT ACK	Remote µP acknowledge
	RMT REQ	Remote µP request
	ROM	Read only memory
	RR	Read
	RVS	Read vertical synchronization
S.	S.REEL	Supply reel sensor
	S.TRACK	Slow tracking
	S/C	Serial input control
	S/E	Serial input enable
	S/H	Sample and hold
	SAP (SA)	Second Audio program
	SAW	Sawtooth
	SC	Serial control
	SC	Sub carrier
	SEP	Separator
	SIECTL	Serial input enable control
	SIF	Sound Intermediate frequency
	SIG	Signal
	S ON S	Sound on sound
	SOC	Serial output control

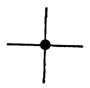
	SOE	Serial output enable
	SOL	Solenoid
	SP	Standard play
	SPD	Speed
	SRCE	Source
	SRCH	Search
	SRV	Servo
	ST HOLD	Status Hold
	STABI	Stabilizer
	S-VHS	Super VHS
	SW	Switch
	SW 30Hz(25Hz)	Head switching pulse
	SW 30Hz(A) (25Hz)	Head switching pulse (audio)
	SWA	Switch acknowledge
	SWMM	Switch monostable multivibrator
	SYNC	Synchronizing Signal
T.	T.BRAKE	Take-up brake
	T.REEL	Take-up reel sensor
	T.RESET	Timer reset
	T/L	Tuner/line
	T-µP/TI-µP	Timer Microprocessor
	THR	Threading in/out
	TMO	Test mode
	TP	Test point
	TP	Tape
	TPZ	Trapezoid
	TRS	Transfer
	TU-µP	Tuning microprocessor
	T-V	Tuner-to-video
U.	U/D	Up/down
	UNI	Unified
	UNREG	Unregulated
V.	V.DRV	Vertical drive pulse
	V.DUB	Video dubbing
	V.SYNC	Vertical sync.
	VCO	Voltage controlled oscillator
	VDR	Vertical drive for reading
	VDW	Vertical drive for writing
	V-F	Voltage-to-frequency
	VHS	Video Home Systems
	VOL	Volume
	V-REF	Voltage reference
	VSS	Vertical sync. separator
	Vss	Voltage super source (ground)
	V-T	Video-to-tuner
	VT	Tuning voltage
	VT-U	Tuning voltage – UHF
	VT-V	Tuning voltage – VHF
	V-V	Video-to-video
	VXO	Voltrage controlled crystal oscillator
W.	W/D	White/dark
	WC	Write clock
	WCC	Write clock clear
	WE	Write enable
	WEG	Write enable gate
	WES	Write enable select
	WFF	Write flip flop
	WG	Window gate
	WHD	Write horizontal drive
	WHVD	Write horizontal/vertical drive
	WHSG	White horizontal sync gate
	WHSS	White horizontal sync select
	WRITE ENBL(WE)	Write enable
	WVD	Write vertical drive
Y.	Y/C	Luminance/chrominance
	µP	Microprocessor

BLOCK DIAGRAM

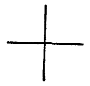
The block diagram for the VX 5000 is divided into one main block diagram and eight sectional block diagrams, and one power supply block diagram.

The main block diagram differs from a traditional block diagram, because the VX 5000 contains a complex signal switching system.

This switching system is symbolized by two matrices, one for video and one for audio. These matrices show the possible connections between the individual blocks, and the following symbol has been used whenever there is a possibility of connecting two strings:

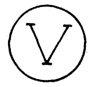


If on the other hand it is not possible to obtain a connection between the two strings, this has been marked as follows:



It furthermore applies to the main block diagram that > indicates a video signal path, >> an audio signal path, whereas ▶ indicates a different type of signal, for example data signals from the system control.

The main block diagrams furthermore contain markings in Roman numerals:

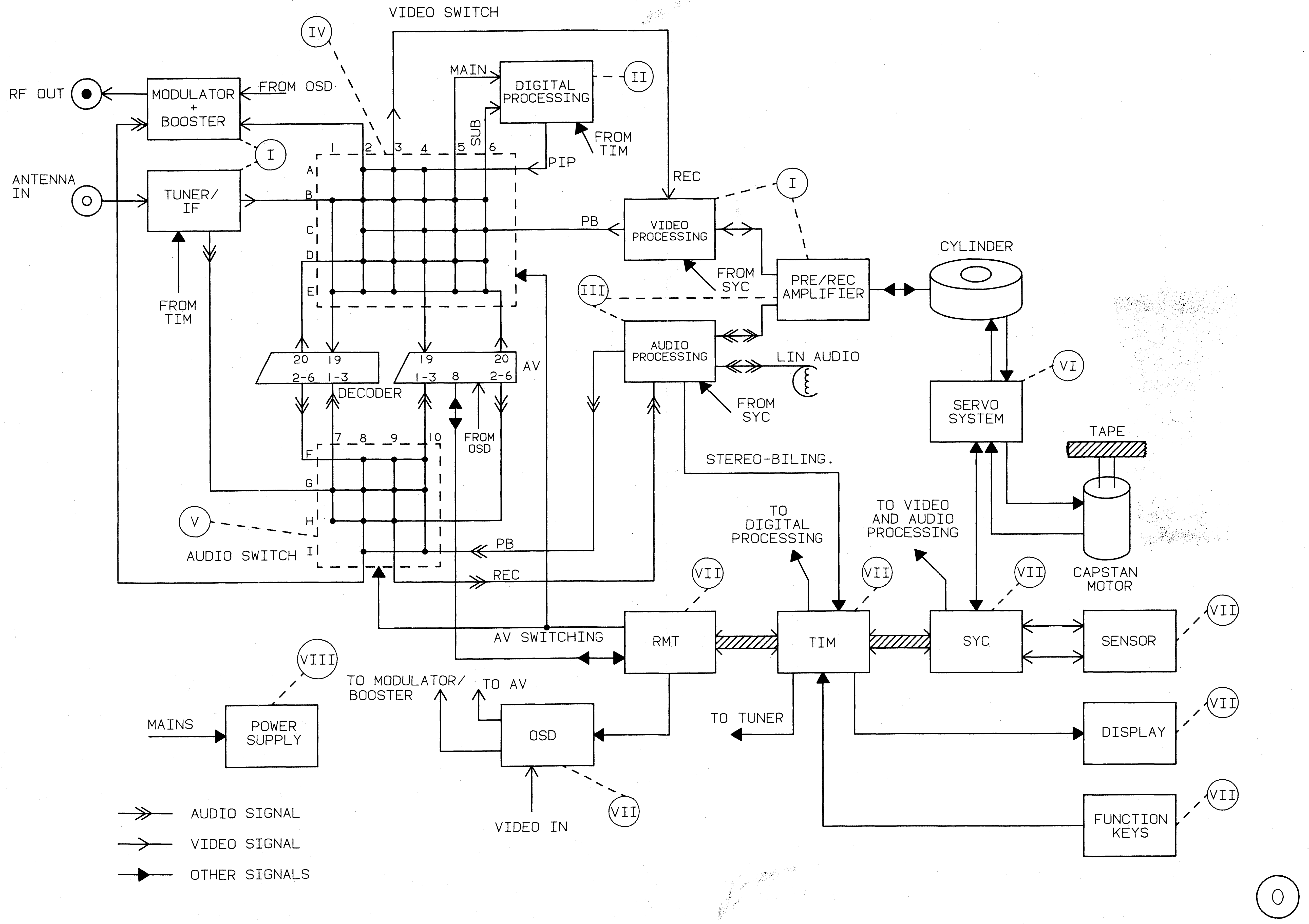


These markings indicate that the block in question can be found as a sectional block diagram in one of the following pages.

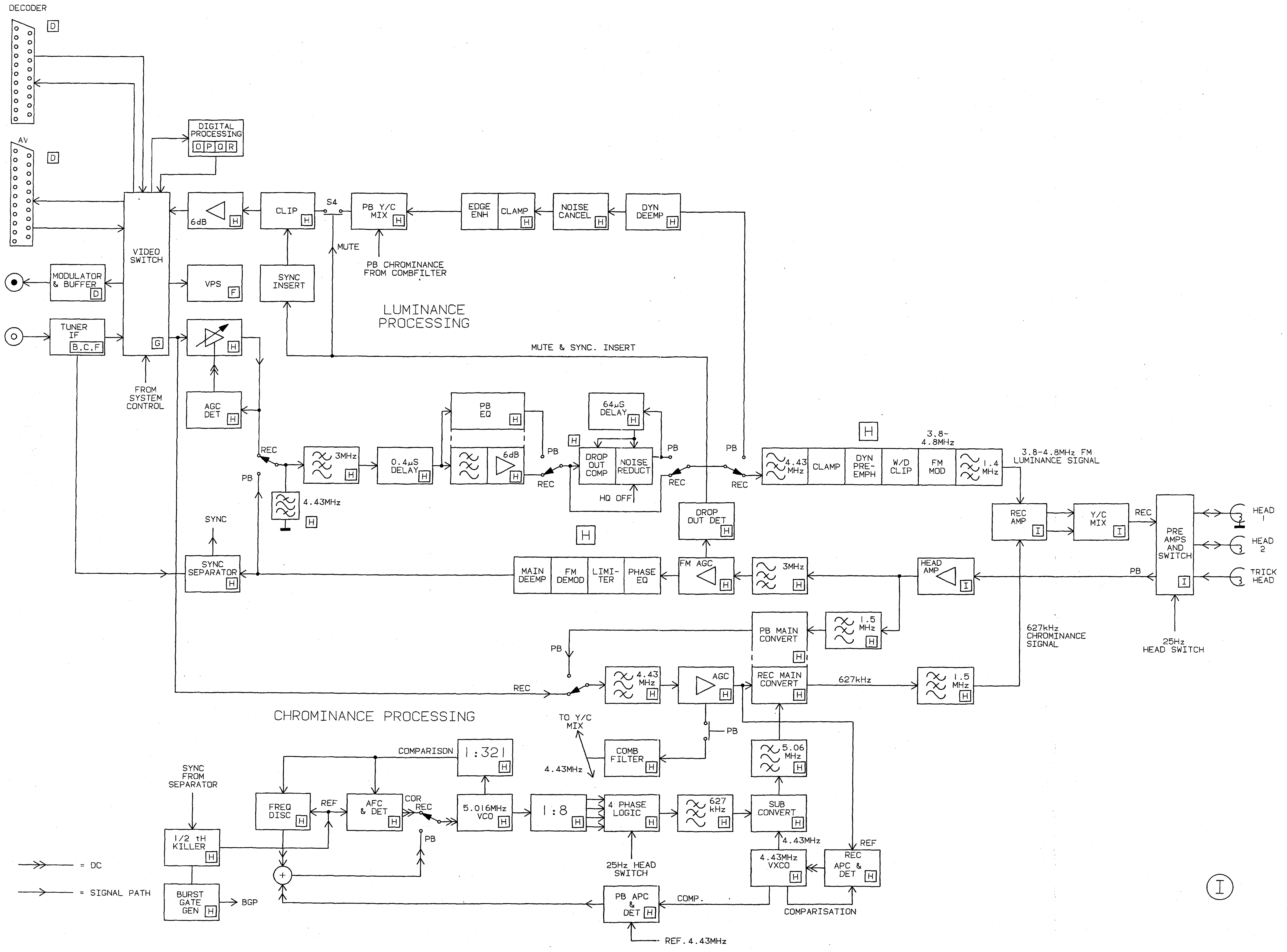
In order to demonstrate the design of the main block diagram, let us follow a signal from the tuner to the audio/video heads in a recording situation:

The aerial signal is applied to the tuner/IF, where it is divided and detected to form a video and an audio signal.
The video signal is applied to the video switch on string B.

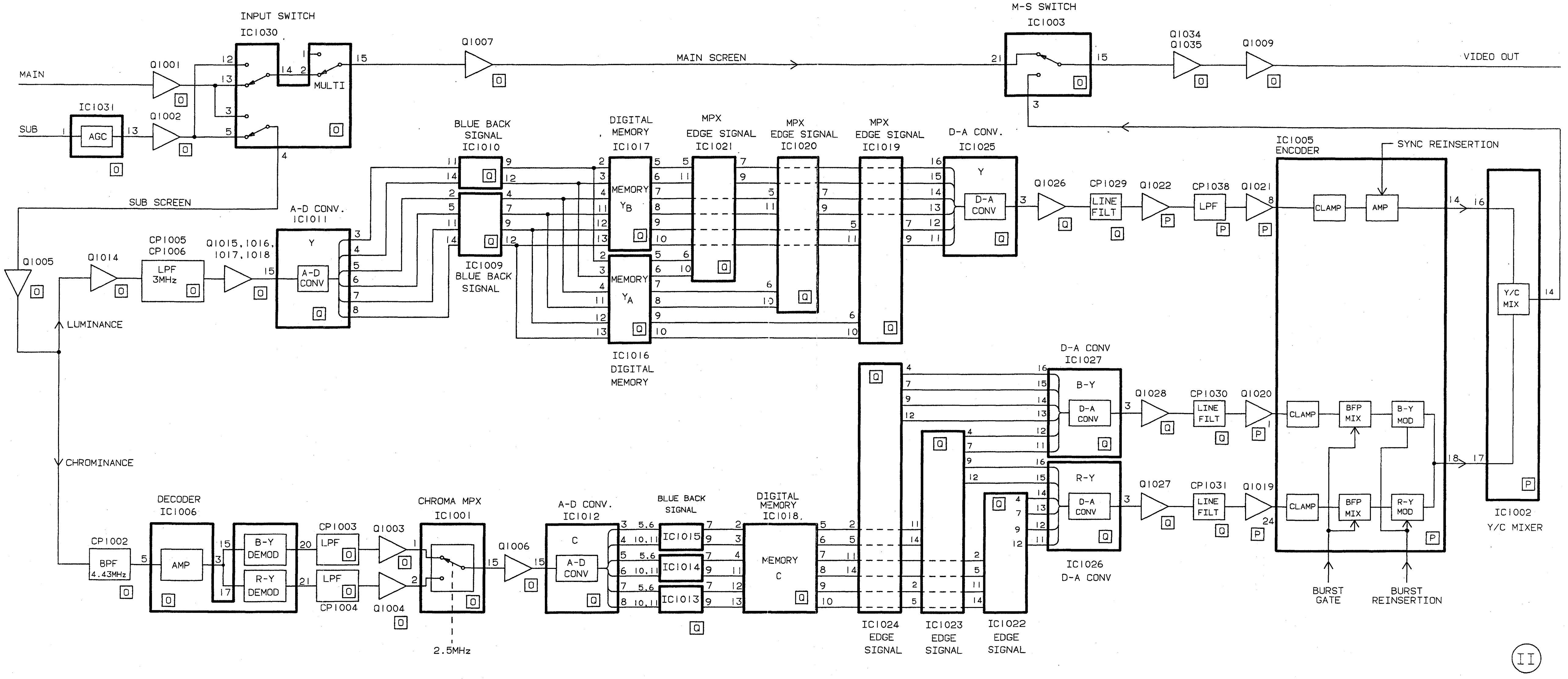
By checking whether there is connection to the crossing strings 1-6, it can now be ascertained to which blocks the video signal from the tuner could potentially be applied.
In our example, we wish to make a recording on the tape. This possibility is available, because there is connection to string 3. The video signal is fed to the video processing block “video processing” and through the recording amplifier to the video heads.
The audio signals from the tuner are applied to string G in the audio switch. Since there is connection between strings 9 and G, the audio signal is fed to the audio processing block “audio processing” and via the recording amplifier to the audio heads.


VIDEO SWITCH
IV
MAIN
DIGITAL PROCESSING
II
RF OUT
MODULATOR + BOOSTER
FROM OSD
SUB
1 2 3 4 5 6
FROM TIM
PIP
I
ANTENNA IN
TUNER/ IF
A B C D E
REC
I
PB
VIDEO PROCESSING
FROM SYC
PRE/REC AMPLIFIER
CYLINDER
III
AUDIO PROCESSING
LIN AUDIO
FROM SYC
VI
SERVO SYSTEM
FROM TIM
20 19 2-6 1-3
DECODER
19 20 1-3 8 2-6
AV
FROM OSD
7 8 9 10
F G H I
V
AUDIO SWITCH
PB
REC
STEREO-BILING.
TAPE
CAPSTAN MOTOR
TO DIGITAL PROCESSING
TO VIDEO AND AUDIO PROCESSING
VII
VII
VII
VII
AV SWITCHING
RMT
TIM
SYC
SENSOR
VIII
TO MODULATOR/ BOOSTER
TO AV
TO TUNER
MAINS
POWER SUPPLY
OSD
VII
DISPLAY
VIDEO IN
VII
VII
FUNCTION KEYS
AUDIO SIGNAL
VIDEO SIGNAL
OTHER SIGNALS
0

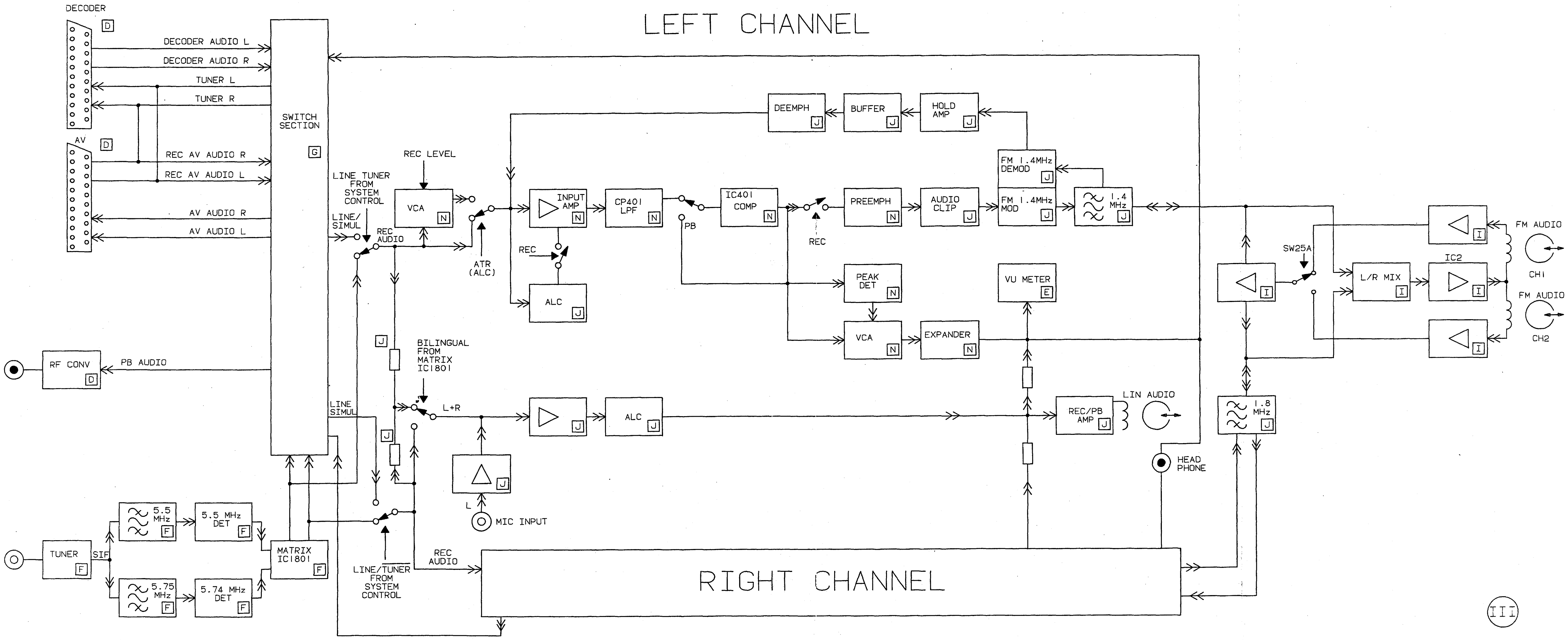
BLOCK DIAGRAM OF VIDEOPROCESSING


DECODER
D
AV
D
MODULATOR & BUFFER
D
TUNER IF
B,C,F
VIDEO SWITCH
G
FROM SYSTEM CONTROL
DIGITAL PROCESSING
O P Q R
6dB
H
CLIP
S4
PB Y/C MIX
EDGE ENH
CLAMP
NOISE CANCEL
DYN DEEMP
MUTE
PB CHROMINANCE FROM COMBFILTER
VPS
F
SYNC INSERT
LUMINANCE PROCESSING
MUTE & SYNC. INSERT
AGC DET
REC
PB
3MHz
0.4µS DELAY
PB EQ
6dB
4.43MHz
64µS DELAY
DROP OUT COMP
NOISE REDUCT
HQ OFF
DROP OUT DET
4.43 MHz
DYN PRE-EMPH
W/D CLIP
FM MOD
1.4 MHz
3.8-4.8MHz
3.8-4.8MHz FM LUMINANCE SIGNAL
SYNC
SYNC SEPARATOR
MAIN DEEMP
FM DEMOD
LIMI-TER
PHASE EQ
FM AGC
HEAD AMP
REC AMP
Y/C MIX
PRE AMPS AND SWITCH
I
HEAD 1
HEAD 2
TRICK HEAD
25Hz HEAD SWITCH
627kHz CHROMINANCE SIGNAL
1.5 MHz
PB MAIN CONVERT
REC MAIN CONVERT
627kHz
AGC
CHROMINANCE PROCESSING
TO Y/C MIX
COMB FILTER
COMPARISON
1:321
SYNC FROM SEPARATOR
FREQ DISC
AFC & DET
COR
5.016MHz VCO
1:8
4 PHASE LOGIC
627 kHz
SUB CONVERT
5.06 MHz
4.43MHz VXCO
REC APC & DET
1/2 fH KILLER
BURST GATE GEN
BGP
25Hz HEAD SWITCH
PB APC & DET
COMP.
COMPARISATION
REF. 4.43MHz
= DC
= SIGNAL PATH
I

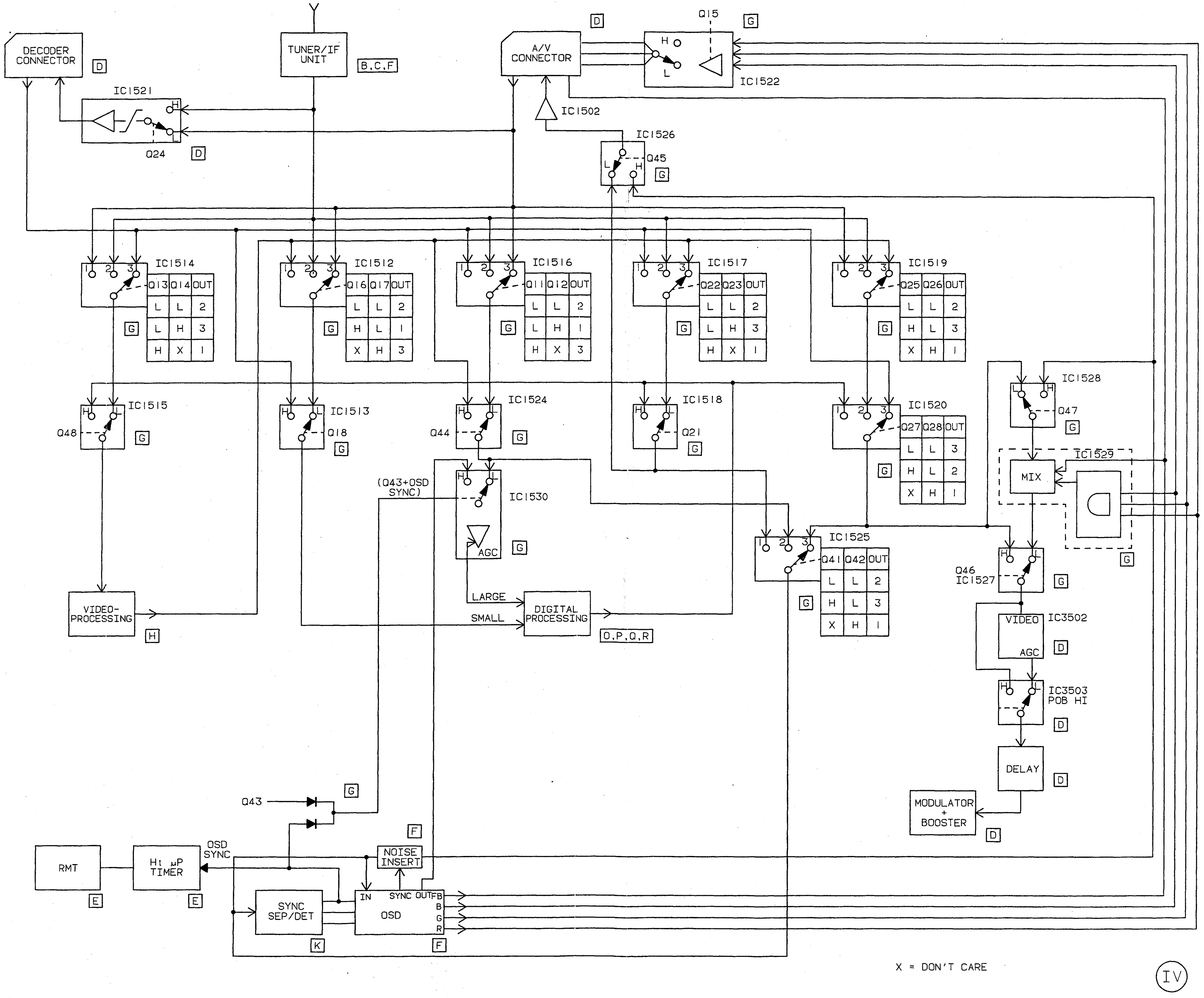
BLOCK DIAGRAM OF DIGITAL PROCESSING


INPUT SWITCH
IC1030
MULTI
MAIN
SUB
Q1001
Q1002
IC1031
AGC
SUB SCREEN
Q1007
MAIN SCREEN
M-S SWITCH
IC1003
Q1034
Q1035
Q1009
VIDEO OUT
BLUE BACK SIGNAL
IC1010
IC1009
BLUE BACK SIGNAL
DIGITAL MEMORY
IC1017
MEMORY
Y_B
MEMORY
Y_A
IC1016
DIGITAL MEMORY
MPX EDGE SIGNAL
IC1021
MPX EDGE SIGNAL
IC1020
MPX EDGE SIGNAL
IC1019
D-A CONV.
IC1025
Y
D-A CONV
A-D CONV.
IC1011
Y
A-D CONV
Q1005
Q1014
CP1005
CP1006
LPF 3MHz
Q1015, 1016, 1017, 1018
LUMINANCE
CHROMINANCE
Q1026
CP1029
LINE FILT
Q1022
CP1038
LPF
Q1021
IC1005
ENCODER
SYNC REINSERTION
CLAMP
AMP
Y/C MIX
IC1002
Y/C MIXER
D-A CONV
IC1027
B-Y
D-A CONV
Q1028
CP1030
LINE FILT
Q1020
BFP MIX
B-Y MOD
R-Y
D-A CONV
Q1027
CP1031
LINE FILT
Q1019
R-Y MOD
IC1026
D-A CONV
BURST GATE
BURST REINSERTION
DECODER
IC1006
AMP
B-Y DEMOD
R-Y DEMOD
CP1002
BPF 4.43MHz
CP1003
LPF
CP1004
Q1003
Q1004
CHROMA MPX
IC1001
2.5MHz
Q1006
A-D CONV.
IC1012
C
A-D CONV
BLUE BACK SIGNAL
IC1015
IC1014
IC1013
DIGITAL MEMORY
IC1018
MEMORY C
IC1024
EDGE SIGNAL
IC1023
EDGE SIGNAL
IC1022
EDGE SIGNAL
II

BLOCK DIAGRAM OF AUDIOPROCESSING


DECODER
D
DECODER AUDIO L
DECODER AUDIO R
TUNER L
TUNER R
AV
D
REC AV AUDIO R
REC AV AUDIO L
AV AUDIO R
AV AUDIO L
SWITCH SECTION
G
LEFT CHANNEL
DEEMPH
J
BUFFER
J
HOLD AMP
J
FM 1.4MHz DEMOD
J
REC LEVEL
LINE TUNER FROM SYSTEM CONTROL
VCA
N
LINE/ SIMUL
REC AUDIO
ATR (ALC)
REC
INPUT AMP
N
CP401 LPF
N
PB
IC401 COMP
N
REC
PREEMPH
N
AUDIO CLIP
J
FM 1.4MHz MOD
J
1.4 MHz
J
ALC
J
PEAK DET
N
VU METER
E
VCA
N
EXPANDER
N
SW25A
L/R MIX
I
IC2
I
I
I
I
FM AUDIO
CH1
FM AUDIO
CH2
RF CONV
D
PB AUDIO
J
BILINGUAL FROM MATRIX IC1801
L+R
LINE SIMUL
J
J
ALC
J
REC/PB AMP
J
LIN AUDIO
1.8 MHz
J
L
J
MIC INPUT
HEAD PHONE
TUNER
F
SIF
5.5 MHz
F
5.5 MHz DET
F
5.75 MHz
F
5.74 MHz DET
F
MATRIX IC1801
F
LINE/TUNER FROM SYSTEM CONTROL
REC AUDIO
RIGHT CHANNEL
III

BLOCK DIAGRAM OF VIDEO SWITCH


DECODER CONNECTOR
D
TUNER/IF UNIT
B,C,F
A/V CONNECTOR
D
Q15
G
H
L
IC1522
IC1521
H
Q24
D
IC1502
IC1526
L
H
Q45
G
IC1514
1
2
3
G
IC1512
G
IC1516
G
IC1517
G
IC1519
G
IC1528
L
H
Q47
G
IC1515
H
L
Q48
G
IC1513
H
L
Q18
G
IC1524
H
L
Q44
G
IC1518
H
L
Q21
G
IC1520
G
IC1529
MIX
G
(Q43+OSD SYNC)
H
L
IC1530
AGC
G
IC1525
G
Q46
IC1527
H
L
G
VIDEO
IC3502
AGC
D
IC3503
POB HI
H
L
D
DELAY
D
MODULATOR + BOOSTER
D
VIDEO-PROCESSING
H
LARGE
SMALL
DIGITAL PROCESSING
O,P,Q,R
Q43
G
F
NOISE INSERT
RMT
E
H: µP TIMER
E
OSD SYNC
SYNC SEP/DET
K
IN
SYNC OUT
FB
B
G
R
OSD
F
IV

IC1514

Q13	Q14	OUT
L	L	2
L	H	3
H	X	1

IC1512

Q16	Q17	OUT
L	L	2
H	L	1
X	H	3

IC1516

Q11	Q12	OUT
L	L	2
L	H	1
H	X	3

IC1517

Q22	Q23	OUT
L	L	2
L	H	3
H	X	1

IC1519

Q25	Q26	OUT
L	L	2
H	L	3
X	H	1

IC1520

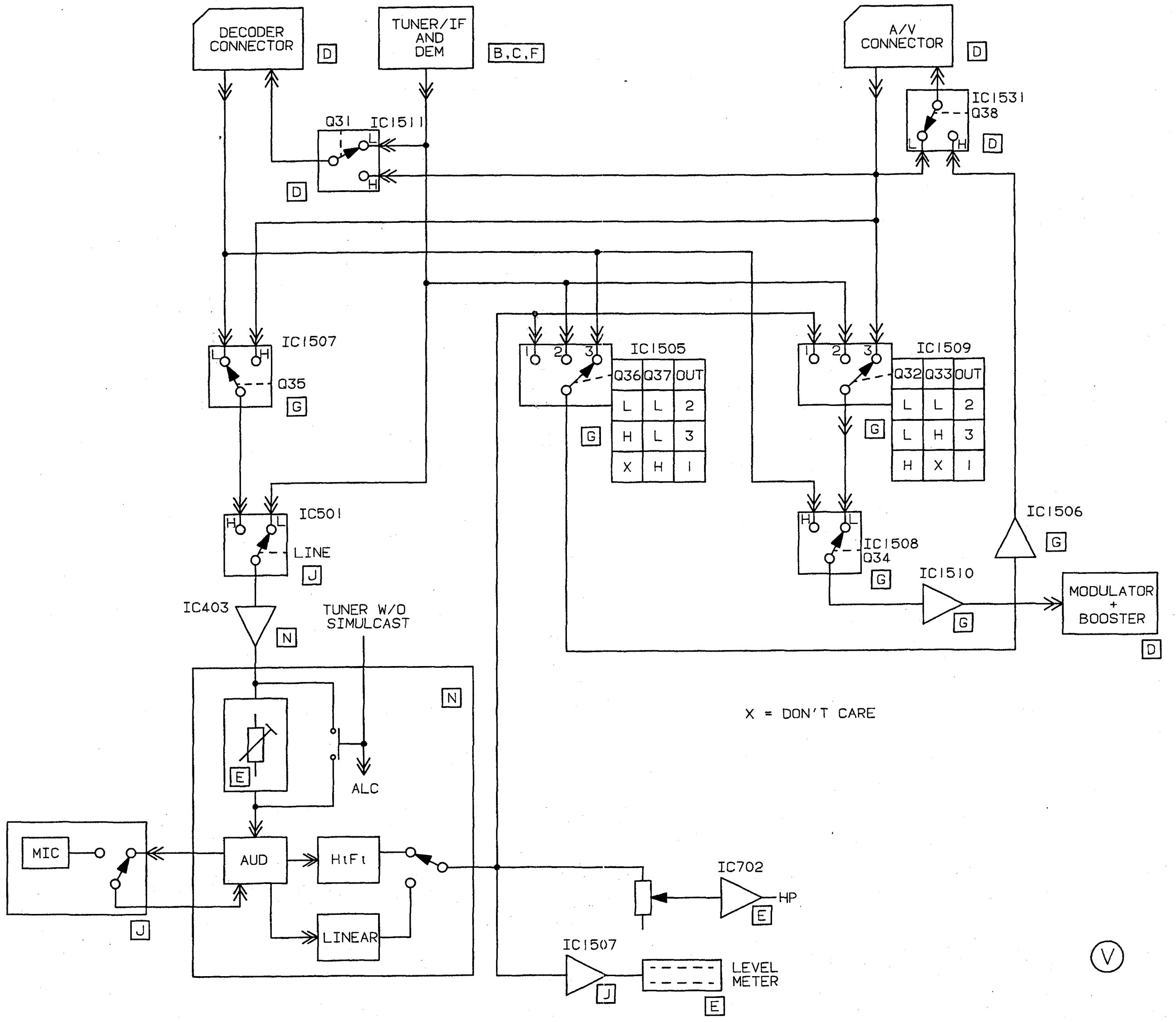
Q27	Q28	OUT
L	L	3
H	L	2
X	H	1

IC1525

Q41	Q42	OUT
L	L	2
H	L	3
X	H	1

X = DON'T CARE

BLOCK DIAGRAM OF AUDIO SWITCH


DECODER CONNECTOR
D
TUNER/IF AND DEM
B,C,F
A/V CONNECTOR
D
Q31
IC1511
L
H
D
IC1531
Q38
L
H
D
IC1507
L
H
Q35
G
IC1505
1
2
3
G
IC1509
1
2
3
G
IC501
H
L
LINE
J
IC1508
Q34
H
L
G
IC1506
G
IC1510
G
MODULATOR + BOOSTER
D
IC403
N
TUNER W/O SIMULCAST
N
E
ALC
MIC
J
AUD
HiFi
LINEAR
IC702
HP
E
IC1507
J
LEVEL METER
E
Ⓥ

IC1505

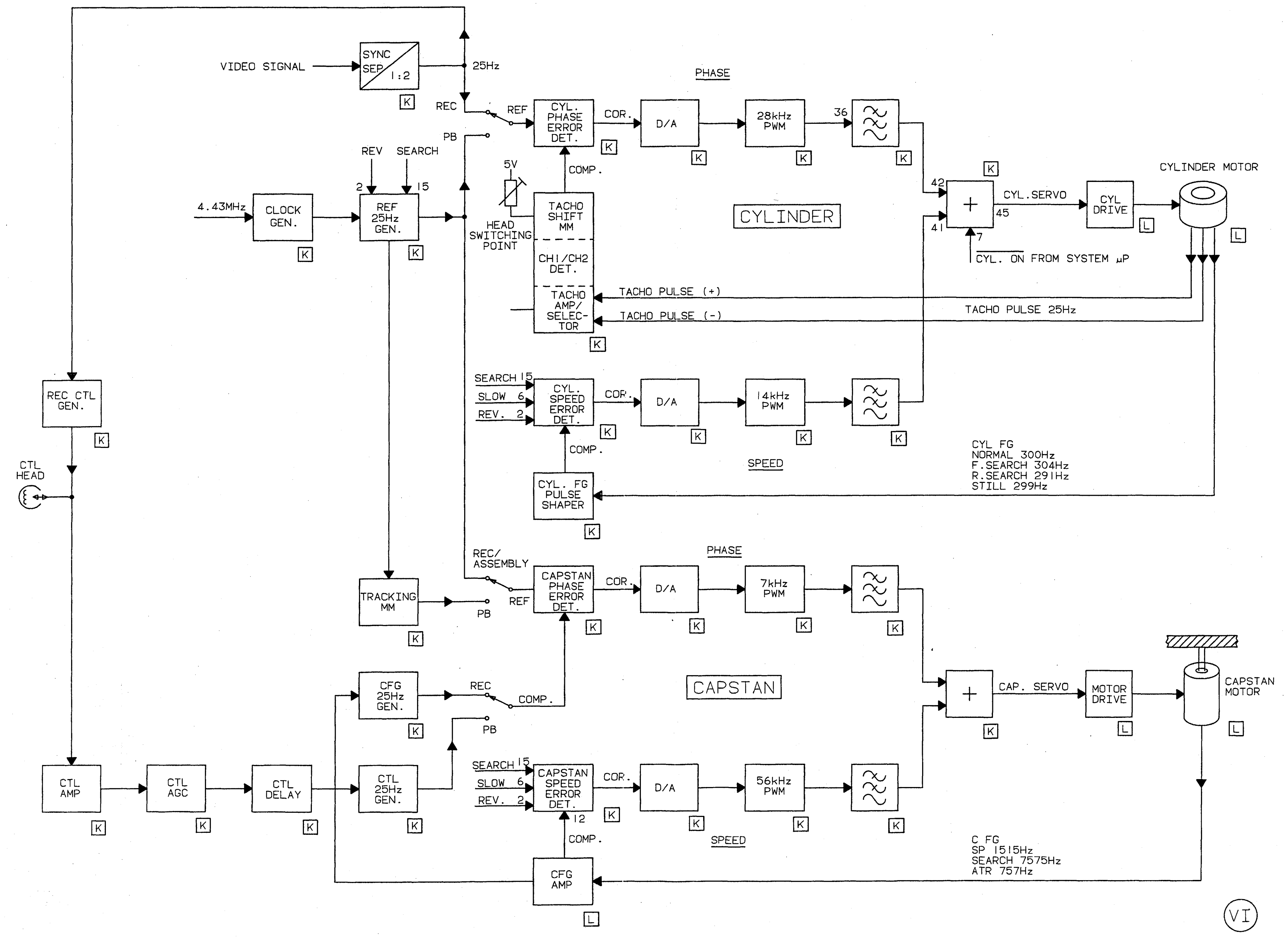
Q36	Q37	OUT
L	L	2
H	L	3
X	H	1

IC1509

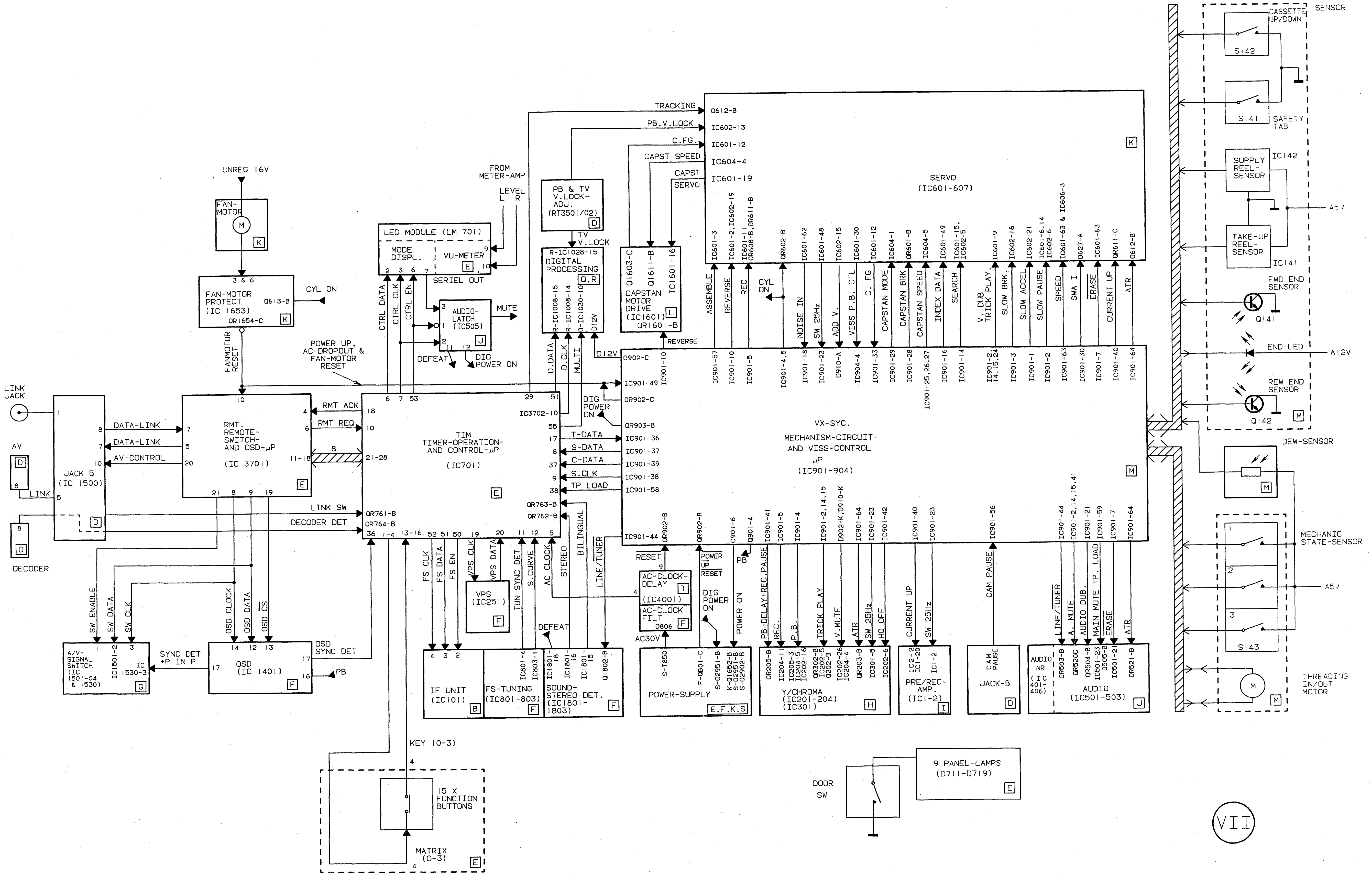
Q32	Q33	OUT
L	L	2
L	H	3
H	X	1

X = DON'T CARE

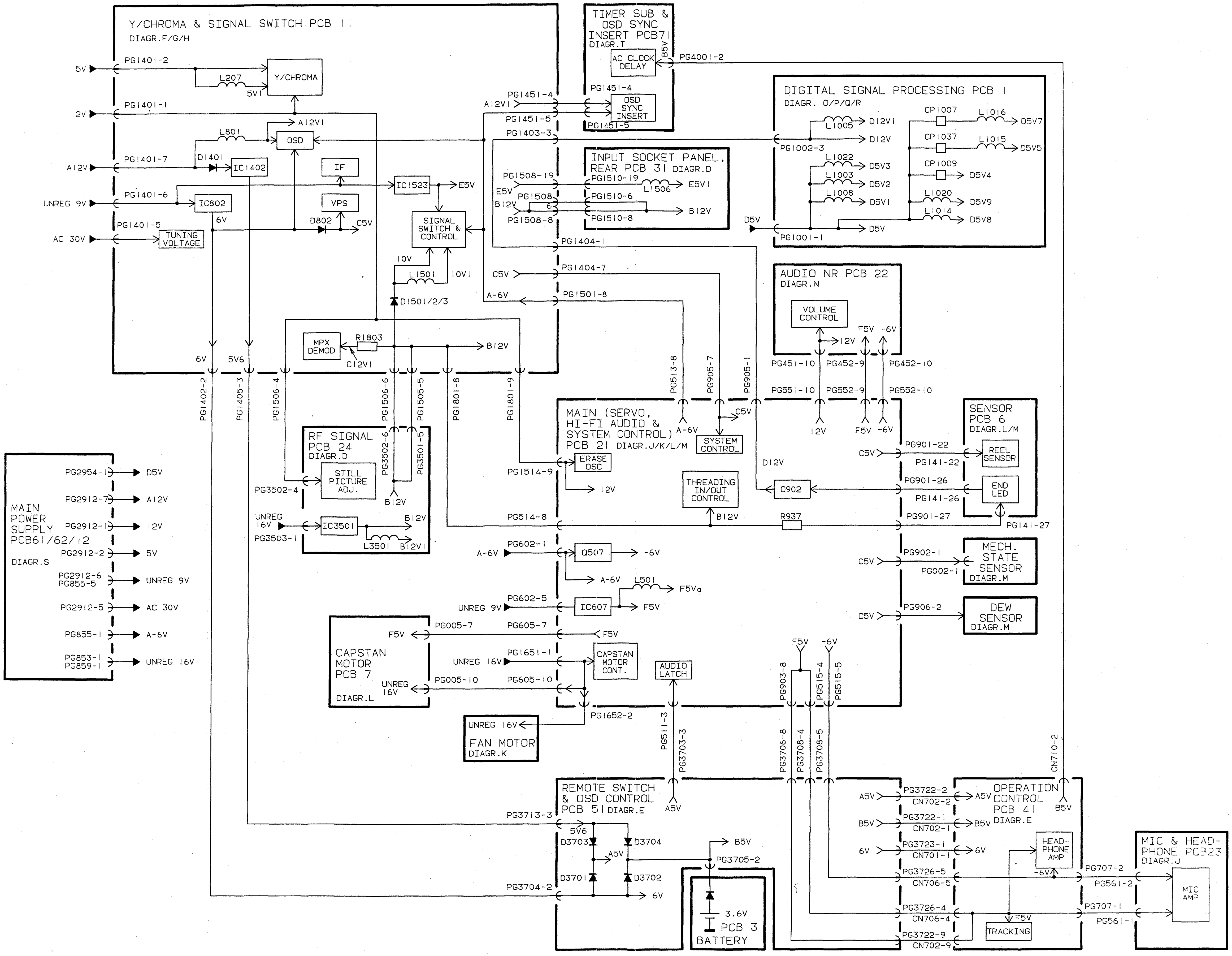
BLOCK DIAGRAM OF SERVO SYSTEMS


VIDEO SIGNAL
SYNC SEP 1:2
K
25Hz
REC
REF
PB
CYL. PHASE ERROR DET.
K
COR.
D/A
K
28kHz PWM
K
36
K
PHASE
REV
SEARCH
2
15
4.43MHz
CLOCK GEN.
K
REF 25Hz GEN.
K
5V
HEAD SWITCHING POINT
COMP.
TACHO SHIFT MM
CH1/CH2 DET.
TACHO AMP/ SELECTOR
K
CYLINDER
42
41
+
45
7
K
CYL.SERVO
CYL DRIVE
L
CYLINDER MOTOR
L
CYL. ON FROM SYSTEM µP
TACHO PULSE (+)
TACHO PULSE (-)
TACHO PULSE 25Hz
REC CTL GEN.
K
CTL HEAD
SEARCH 15
SLOW 6
REV. 2
CYL. SPEED ERROR DET.
K
COR.
D/A
K
14kHz PWM
K
K
COMP.
SPEED
CYL. FG PULSE SHAPER
K
CYL FG
NORMAL 300Hz
F.SEARCH 304Hz
R.SEARCH 291Hz
STILL 299Hz
REC/ ASSEMBLY
PHASE
TRACKING MM
K
PB
REF
CAPSTAN PHASE ERROR DET.
K
COR.
D/A
K
7kHz PWM
K
K
CFG 25Hz GEN.
K
REC
COMP.
PB
CAPSTAN
+
K
CAP. SERVO
MOTOR DRIVE
L
CAPSTAN MOTOR
L
CTL AMP
K
CTL AGC
K
CTL DELAY
K
CTL 25Hz GEN.
K
SEARCH 15
SLOW 6
REV. 2
CAPSTAN SPEED ERROR DET.
12
K
COR.
D/A
K
56kHz PWM
K
K
COMP.
SPEED
C FG
SP 1515Hz
SEARCH 7575Hz
ATR 757Hz
CFG AMP
L
VI

DETAILED BLOCK DIAGRAM OF SYSTEM-CONTROL


UNREG 16V
FAN-MOTOR
M
K
FAN-MOTOR PROTECT (IC 1653)
Q613-B
QR1654-C
CYL ON
FANMOTOR RESET
POWER UP, AC-DROPOUT & FAN-MOTOR RESET
LED MODULE (LM 701)
MODE DISPL.
VU-METER
E
SERIEL OUT
FROM METER-AMP
LEVEL L R
CTRL DATA
CTRL CLK
CTRL EN
AUDIO-LATCH (IC505)
J
MUTE
DEFEAT
DIG POWER ON
PB & TV V.LOCK-ADJ. (RT3501/02)
D
TV V.LOCK
R-IC1028-15 DIGITAL PROCESSING
Q,R
R-IC1008-15
R-IC1008-14
Q-IC1030-10
D12V
D.DATA
D.CLK
MULTI
Q1603-C
Q1611-B
IC1601-16
CAPSTAN MOTOR DRIVE (IC1601)
QR1601-B
L
REVERSE
TRACKING
PB.V.LOCK
C.FG.
CAPST SPEED
CAPST SERVO
Q612-B
IC602-13
IC601-12
IC604-4
IC601-19
SERVO (IC601-607)
K
IC601-3
IC601-2, IC602-19
IC601-11 QR608-B, QR611-B
QR602-B
IC601-62
IC601-48
IC602-15
IC601-30
IC601-12
IC604-1
QR601-8
IC604-5
IC601-49
IC601-15, IC602-5
IC601-9
IC602-16
IC602-21
IC601-6,14 IC602-6
IC601-63 & IC606-3
D627-A
IC601-63
QR611-C
Q612-B
ASSEMBLE
REVERSE
REC
CYL ON
NOISE IN
SW 25Hz
ADD V.
VISS P.B. CTL
C. FG
CAPSTAN MODE
CAPSTAN BRK
CAPSTAN SPEED
INDEX DATA
SEARCH
V. DUB TRICK PLAY
SLOW BRK.
SLOW ACCEL
SLOW PAUSE
SPEED
SWA I
ERASE
CURRENT UP
ATR
IC901-57
IC901-10
IC901-5
IC901-4,5
IC901-18
IC901-23
D910-A
IC904-4
IC901-33
IC901-29
IC901-28
IC901-25,26,27
IC901-16
IC901-14
IC901-2, 14,15,24
IC901-3
IC901-1
IC901-2
IC901-63
IC901-30
IC901-7
IC901-40
IC901-64
D12V
Q902-C
IC901-10
IC901-49
QR902-C
QR903-B
IC901-36
IC901-37
IC901-39
IC901-38
IC901-58
DIG POWER ON
T-DATA
S-DATA
C-DATA
S.CLK
TP LOAD
VX-SYC. MECHANISM-CIRCUIT- AND VISS-CONTROL µP (IC901-904)
M
LINK JACK
AV
D
LINK
JACK B (IC 1500)
DATA-LINK
DATA-LINK
AV-CONTROL
DECODER
RMT. REMOTE-SWITCH- AND OSD-µP (IC 3701)
E
RMT ACK
RMT REQ
LINK SW
DECODER DET
TIM TIMER-OPERATION- AND CONTROL-µP (IC701)
IC3702-10
QR761-B
QR764-B
QR763-B
QR762-B
SW ENABLE
SW DATA
SW CLK
OSD CLOCK
OSD DATA
OSD CS
A/V-SIGNAL SWITCH (IC 1501-04 & 1530)
IC1501-2
IC 1530-3
G
SYNC DET +P IN P
OSD (IC 1401)
F
OSD SYNC DET
PB
FS CLK
FS DATA
FS EN
VPS CLK
VPS DATA
VPS (IC251)
TUN SYNC DET
S.CURVE
AC CLOCK
STEREO
BILINGUAL
LINE/TUNER
DEFEAT
IF UNIT (IC101)
B
FS-TUNING (IC801-803)
IC801-4
IC803-1
IC1801-18
IC1801-16
IC1801-15
Q1802-B
SOUND-STEREO-DET. (IC1801-1803)
IC901-44
QR902-B
QR902-R
Q901-6
Q901-4
RESET
POWER UP RESET
AC-CLOCK-DELAY (IC4001)
T
AC-CLOCK FILT D806
DIG POWER ON
POWER ON
AC30V
S-T850
F-Q801-C
S-Q2951-B
K-Q1652-B
S-Q2951-B
S-Q2902-B
POWER-SUPPLY
E.F.K.S
IC901-41
IC901-5
IC901-4
IC901-2,14,15
D902-K,D910-K
IC901-64
IC901-23
IC901-42
PB-DELAY+REC.PAUSE
REC.
P.B.
TRICK PLAY
V.MUTE
ATR
SW 25Hz
HQ OFF
QR205-B
IC204-11
IC205-3 IC204-5 IC202-16
QR302-B IC202-5 Q202-B
IC202-26 IC204-4
QR203-B
IC301-5
IC202-6
Y/CHROMA (IC201-204) (IC301)
H
IC901-40
IC901-23
CURRENT UP
SW 25Hz
IC2-2 IC1-20
IC1-2
PRE/REC-AMP. (IC1-2)
I
IC901-56
CAM PAUSE
JACK-B
D
IC901-44
IC901-2,14,15,41
IC901-21
IC901-59
IC901-7
IC901-64
LINE/TUNER
A. MUTE
AUDIO DUB
MAIN MUTE TP. LOAD
ERASE
ATR
AUDIO NR (IC 401-406)
QR503-B
QR520C
QR504-B
IC501-23
D505-B
IC501-21
QR521-B
AUDIO (IC501-503)
J
KEY (0-3)
15 X FUNCTION BUTTONS
MATRIX (0-3)
E
9 PANEL-LAMPS (D711-D719)
E
DOOR SW
CASSETTE UP/DOWN
SENSOR
S142
S141
SAFETY TAB
SUPPLY REEL-SENSOR
IC142
TAKE-UP REEL-SENSOR
IC141
A5V
FWD END SENSOR
Q141
END LED
A12V
REW END SENSOR
Q142
M
DEW-SENSOR
M
MECHANIC STATE-SENSOR
A5V
S143
THREADING IN/OUT MOTOR
M
VII

BLOCK DIAGRAM POWER SUPPLY


Y/CHROMA & SIGNAL SWITCH PCB 11
DIAGR.F/G/H
5V
PG1401-2
L207
5V1
Y/CHROMA
12V
PG1401-1
A12V1
L801
OSD
A12V
PG1401-7
D1401
IC1402
IF
IC1523
E5V
UNREG 9V
PG1401-6
IC802
VPS
6V
D802
C5V
AC 30V
PG1401-5
TUNING VOLTAGE
SIGNAL SWITCH & CONTROL
10V
L1501
10V1
D1501/2/3
MPX DEMOD
R1803
C12V1
B12V
6V
5V6
PG1402-2
PG1405-3
PG1506-4
PG1506-6
PG1505-5
PG1801-8
PG1801-9
TIMER SUB & OSD SYNC INSERT PCB71
DIAGR.T
AC CLOCK DELAY
B5V
PG4001-2
PG1451-4
A12V1
OSD SYNC INSERT
PG1451-5
PG1451-5
PG1403-3
INPUT SOCKET PANEL, REAR PCB 31 DIAGR.D
PG1508-19
PG1510-19
L1506
E5V1
E5V
B12V
PG1508-6
PG1510-6
PG1508-8
PG1510-8
B12V
PG1404-1
C5V
PG1404-7
A-6V
PG1501-8
DIGITAL SIGNAL PROCESSING PCB 1
DIAGR. O/P/Q/R
L1005
D12V1
D12V
PG1002-3
CP1007
L1016
D5V7
CP1037
L1015
D5V5
L1022
D5V3
L1003
D5V2
L1008
D5V1
CP1009
D5V4
L1020
D5V9
L1014
D5V8
D5V
D5V
PG1001-1
AUDIO NR PCB 22
DIAGR.N
VOLUME CONTROL
F5V -6V
12V
PG451-10
PG452-9
PG452-10
PG551-10
PG552-9
PG552-10
12V
F5V -6V
PG513-8
PG905-7
PG905-1
MAIN (SERVO, HI-FI AUDIO & SYSTEM CONTROL) PCB 21 DIAGR.J/K/L/M
A-6V
C5V
SYSTEM CONTROL
ERASE OSC
PG1514-9
12V
D12V
THREADING IN/OUT CONTROL
Q902
B12V
R937
PG514-8
SENSOR PCB 6
DIAGR.L/M
C5V
PG901-22
REEL SENSOR
PG141-22
PG901-26
END LED
PG141-26
PG901-27
PG141-27
RF SIGNAL PCB 24
DIAGR.D
PG3502-6
PG3501-5
STILL PICTURE ADJ.
PG3502-4
B12V
UNREG 16V
IC3501
B12V
PG3503-1
L3501
B12V1
MAIN POWER SUPPLY PCB61/62/12
DIAGR.S
PG2954-1
D5V
PG2912-7
A12V
PG2912-1
12V
PG2912-2
5V
PG2912-6
PG855-5
UNREG 9V
PG2912-5
AC 30V
PG855-1
A-6V
PG853-1
PG859-1
UNREG 16V
A-6V
PG602-1
Q507
-6V
A-6V
L501
F5Va
PG602-5
UNREG 9V
IC607
F5V
MECH. STATE SENSOR
DIAGR.M
C5V
PG902-1
PG002-1
DEW SENSOR
DIAGR.M
C5V
PG906-2
CAPSTAN MOTOR PCB 7
DIAGR.L
F5V
PG005-7
PG605-7
F5V
UNREG 16V
PG1651-1
CAPSTAN MOTOR CONT.
UNREG 16V
PG005-10
PG605-10
AUDIO LATCH
F5V -6V
PG903-8
PG515-4
PG515-5
PG1652-2
UNREG 16V
FAN MOTOR
DIAGR.K
PG511-3
PG3703-3
PG3706-8
PG3708-4
PG3708-5
CN710-2
REMOTE SWITCH & OSD CONTROL PCB 51 DIAGR.E
A5V
PG3713-3
5V6
D3703
D3704
A5V
B5V
PG3705-2
D3701
D3702
PG3704-2
6V
3.6V
PCB 3
BATTERY
OPERATION CONTROL PCB 41
DIAGR.E
B5V
A5V
PG3722-2
CN702-2
A5V
B5V
PG3722-1
CN702-1
B5V
6V
PG3723-1
CN701-1
6V
HEAD-PHONE AMP
PG3726-5
CN706-5
-6V
PG3726-4
CN706-4
F5V
PG3722-9
CN702-9
TRACKING
MIC & HEAD-PHONE PCB23
DIAGR.J
PG707-2
PG561-2
MIC AMP
PG707-1
PG561-1

WIRING DIAGRAM

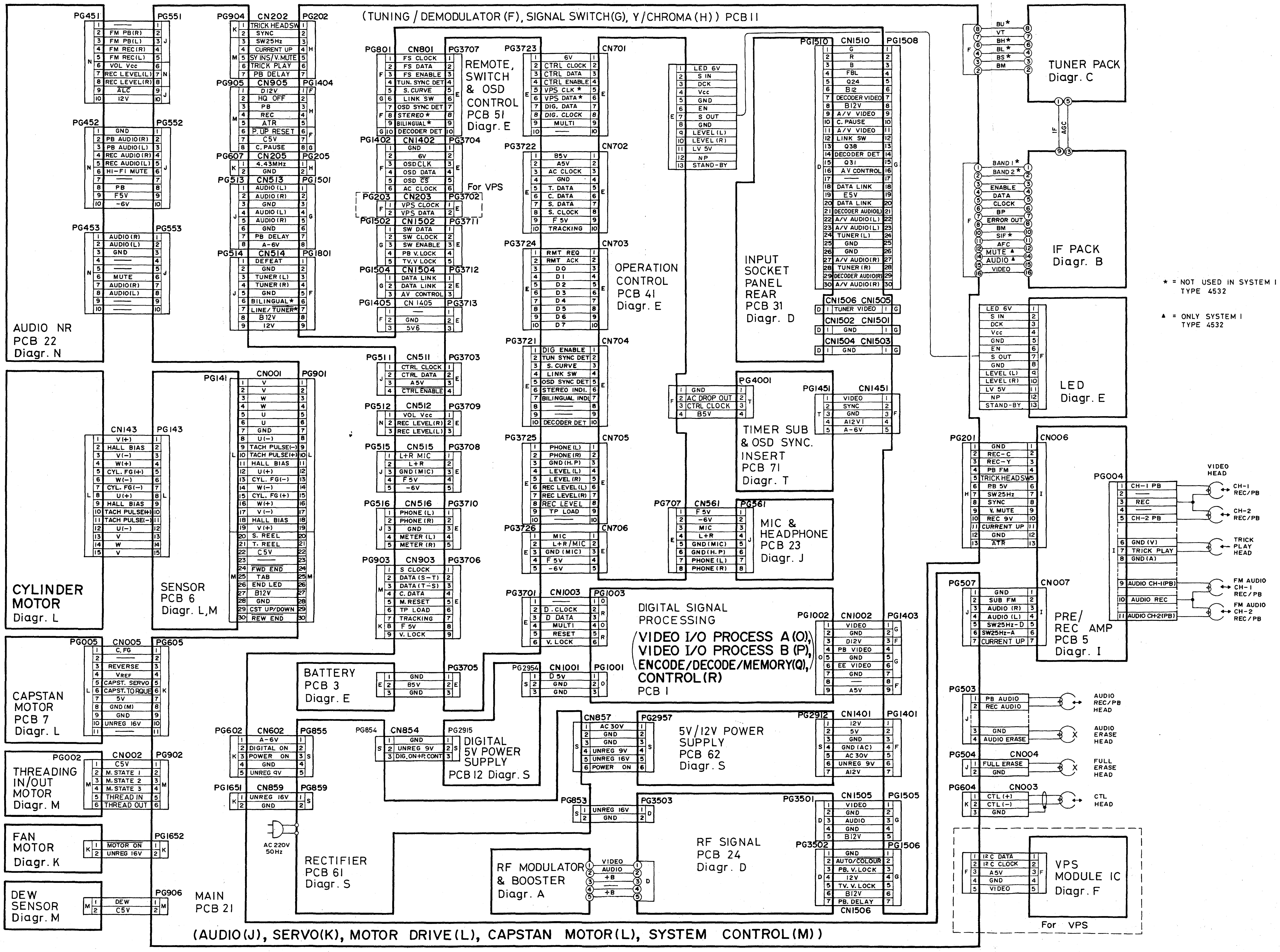

(TUNING / DEMODULATOR (F), SIGNAL SWITCH (G), Y/CHROMA (H)) PCB 11
(AUDIO (J), SERVO (K), MOTOR DRIVE (L), CAPSTAN MOTOR (L), SYSTEM CONTROL (M))
MAIN PCB 21
AUDIO NR PCB 22 Diagr. N
CYLINDER MOTOR Diagr. L
SENSOR PCB 6 Diagr. L,M
CAPSTAN MOTOR PCB 7 Diagr. L
THREADING IN/OUT MOTOR Diagr. M
FAN MOTOR Diagr. K
DEW SENSOR Diagr. M
REMOTE, SWITCH & OSD CONTROL PCB 51 Diagr. E
For VPS
OPERATION CONTROL PCB 41 Diagr. E
INPUT SOCKET PANEL REAR PCB 31 Diagr. D
TIMER SUB & OSD SYNC. INSERT PCB 71 Diagr. T
MIC & HEADPHONE PCB 23 Diagr. J
DIGITAL SIGNAL PROCESSING
VIDEO I/O PROCESS A (O), VIDEO I/O PROCESS B (P), ENCODE/DECODE/MEMORY (Q), CONTROL (R)
PCB 1
BATTERY PCB 3 Diagr. E
DIGITAL 5V POWER SUPPLY PCB 12 Diagr. S
5V/12V POWER SUPPLY PCB 62 Diagr. S
RECTIFIER PCB 61 Diagr. S
AC 220V 50Hz
RF MODULATOR & BOOSTER Diagr. A
RF SIGNAL PCB 24 Diagr. D
TUNER PACK Diagr. C
IF PACK Diagr. B
IF AGC
LED Diagr. E
PRE/REC AMP PCB 5 Diagr. I
VPS MODULE IC Diagr. F
For VPS
VIDEO HEAD
CH-1 REC/PB
CH-2 REC/PB
TRICK PLAY HEAD
FM AUDIO CH-1 REC/PB
FM AUDIO CH-2 REC/PB
AUDIO REC/PB HEAD
AUDIO ERASE HEAD
FULL ERASE HEAD
CTL HEAD
* = NOT USED IN SYSTEM I TYPE 4532
▲ = ONLY SYSTEM I TYPE 4532
PG451 PG551 PG452 PG552 PG453 PG553
PG904 CN202 PG202 PG905 CN905 PG1404 PG607 CN205 PG205 PG513 CN513 PG1501 PG514 CN514 PG1801
PG801 CN801 PG3707 PG1402 CN1402 PG3704 PG203 CN203 PG3702 PG1502 CN1502 PG3711 PG1504 CN1504 PG3712 PG1405 CN 1405 PG3713
PG3723 CN701 PG3722 CN702 PG3724 CN703 PG3721 CN704 PG3725 CN705 PG3726 CN706
PG1510 CN1510 PG1508 CN1506 CN1505 CN1502 CN1501 CN1504 CN1503
PG511 CN511 PG3703 PG512 CN512 PG3709 PG515 CN515 PG3708 PG516 CN516 PG3710 PG903 CN903 PG3706
PG141 CN001 PG901 CN143 PG143
PG005 CN005 PG605 PG002 CN002 PG902 PG1652 PG906
PG4001 PG1451 CN1451 PG707 CN561 PG561
PG3701 CN1003 PG1003 PG1002 CN1002 PG1403 PG2954 CN1001 PG1001 PG3705
PG602 CN602 PG855 PG854 CN854 PG2915 PG1651 CN859 PG859
CN857 PG2957 PG2912 CN1401 PG1401 PG853 PG3503 PG3501 CN1505 PG1505 PG3502 PG1506 CN1506
PG201 CN006 PG004 PG507 CN007 PG503 PG504 CN004 PG604 CN003

DIAGRAM A RF MODULATOR & BOOSTER PAL B/G

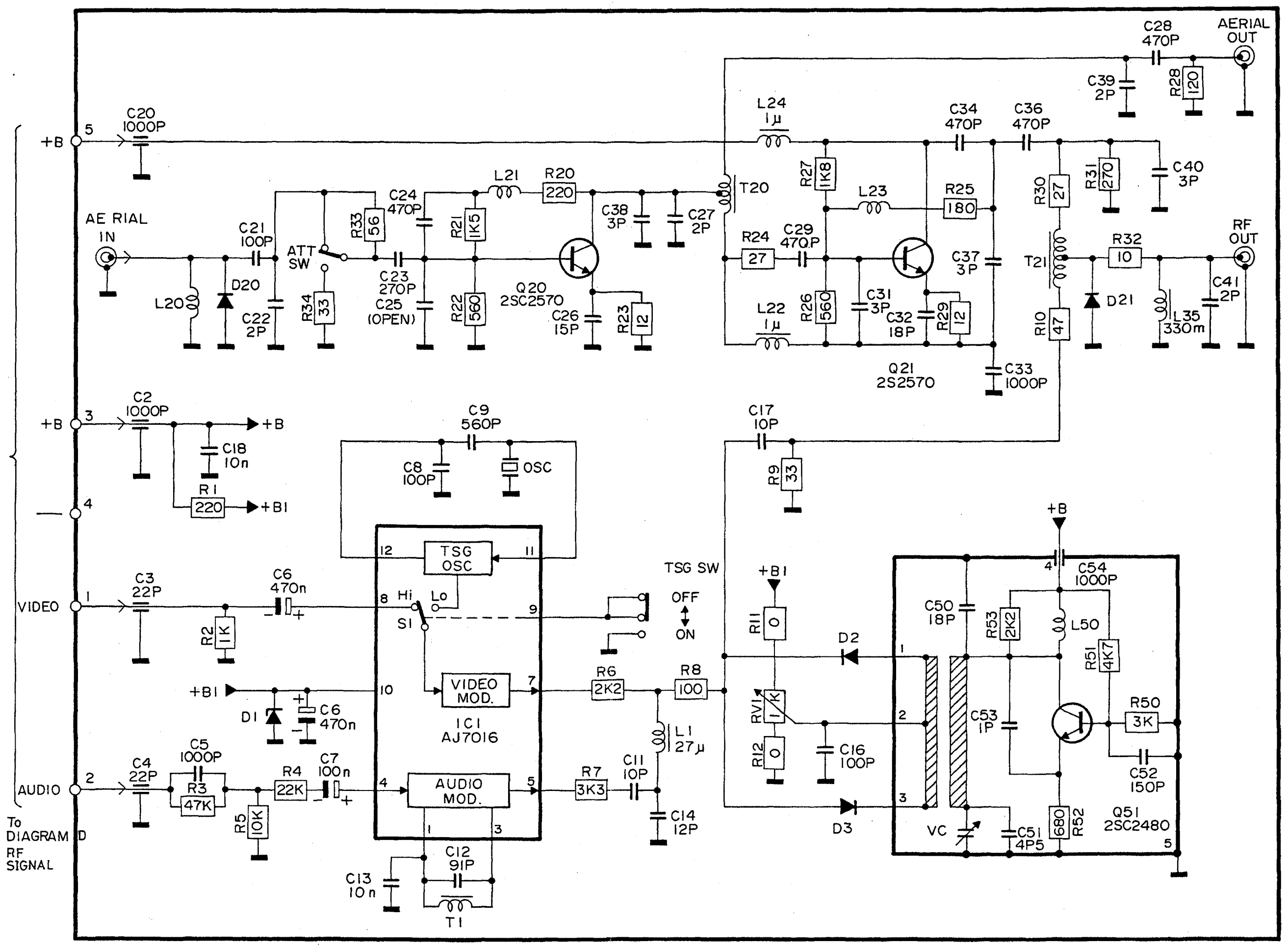

+B 5
C20 1000P
AE RIAL IN
L20
D20
C21 100P
C22 2P
ATT SW
R34 33
R33 56
C24 470P
C23 270P
C25 (OPEN)
R21 1K5
R22 560
L21
R20 220
Q20 2SC2570
C26 15P
R23 12
C38 3P
C27 2P
T20
L24 1μ
R24 27
C29 470P
R27 1K8
L23
R25 180
R26 560
C31 3P
C32 18P
R29 12
L22 1μ
Q21 2S2570
C34 470P
C36 470P
C37 3P
C33 1000P
R30 27
T21
R10 47
R31 270
C40 3P
R32 10
D21
L35 330m
C41 2P
RF OUT
C28 470P
AERIAL OUT
C39 2P
R28 120
+B 3
C2 1000P
C18 10n
R1 220
+B
+B1
4
C9 560P
C8 100P
OSC
VIDEO 1
C3 22P
R2 1K
C6 470n
+B1
D1
C6 470n
AUDIO 2
C4 22P
C5 1000P
R3 47K
R5 10K
R4 22K
C7 100n
To DIAGRAM D RF SIGNAL
TSG OSC
Hi Lo
S1
VIDEO MOD.
IC1 AJ7016
AUDIO MOD.
C12 91P
C13 10n
T1
R6 2K2
R7 3K3
C11 10P
R8 100
L1 27μ
C14 12P
TSG SW
OFF
ON
C17 10P
R9 33
+B1
R11 0
D2
RV1 1K
R12 0
C16 100P
D3
+B
C54 1000P
C50 18P
R53 2K2
L50
R51 4K7
C53 1P
R50 3K
C52 150P
VC
C51 4P5
R52 680
Q51 2SC2480
1 2 3 4 5 7 8 9 10 11 12

DIAGRAM A RF MODULATOR & BOOSTER PAL I

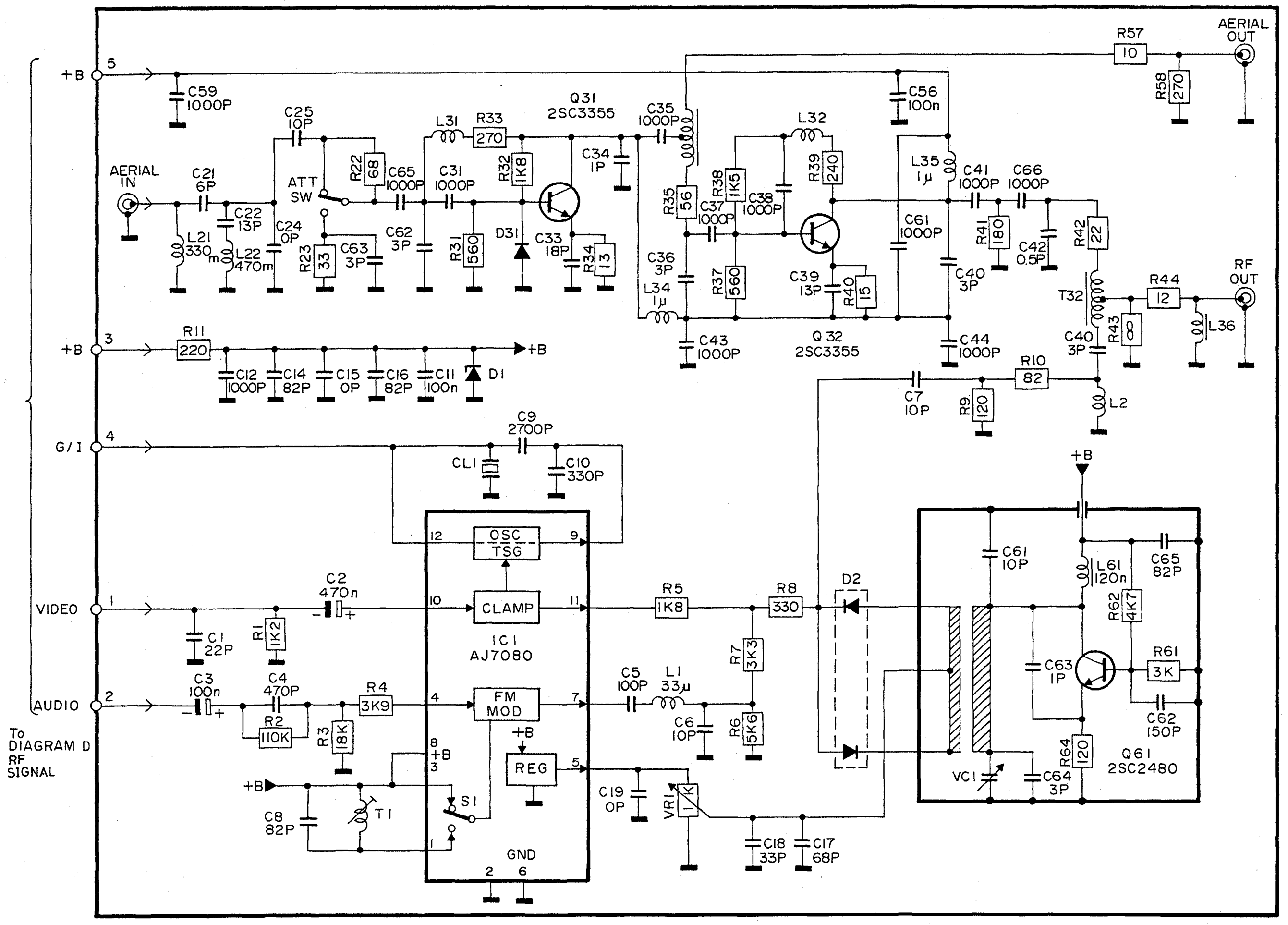

+B 5
C59 1000P
AERIAL IN
C21 6P
C22 13P
L21 330m
L22 470m
C25 10P
ATT SW
C24 0P
R23 33
C63 3P
R22 68
C65 1000P
C62 3P
L31
C31 1000P
R31 560
R33 270
R32 1K8
D31
C33 18P
R34 13
Q31 2SC3355
C34 1P
C35 1000P
R35 56
C37 1000P
R38 1K5
C38 1000P
C36 3P
L34 1μ
R37 560
C43 1000P
L32
R39 240
C39 13P
R40 15
Q32 2SC3355
C56 100n
L35 1μ
C61 1000P
C40 3P
C44 1000P
C41 1000P
C66 1000P
R41 180
C42 0.5P
R42 22
T32
R43 0P
C40 3P
R44 12
L36
RF OUT
R57 10
R58 270
AERIAL OUT
+B 3
R11 220
C12 1000P
C14 82P
C15 0P
C16 82P
C11 100n
D1
+B
C7 10P
R9 120
R10 82
L2
G/I 4
C9 2700P
CL1
C10 330P
OSC TSG
VIDEO 1
C2 470n
C1 22P
R1 1K2
CLAMP
IC1 AJ7080
R5 1K8
R8 330
D2
R7 3K3
AUDIO 2
C3 100n
C4 470P
R2 110K
R3 18K
R4 3K9
FM MOD
C5 100P
L1 33μ
C6 10P
R6 5K6
+B
REG
C19 0P
VR1 1K
C18 33P
C17 68P
+B
C8 82P
T1
S1
GND
2 6
To DIAGRAM D RF SIGNAL
+B
C61 10P
L61 120n
C65 82P
R62 4K7
C63 1P
R61 3K
C62 150P
VC1
R64 120
C64 3P
Q61 2SC2480
1 3 4 5 7 8 9 10 11 12

DIAGRAM B IF PACK PAL B/G

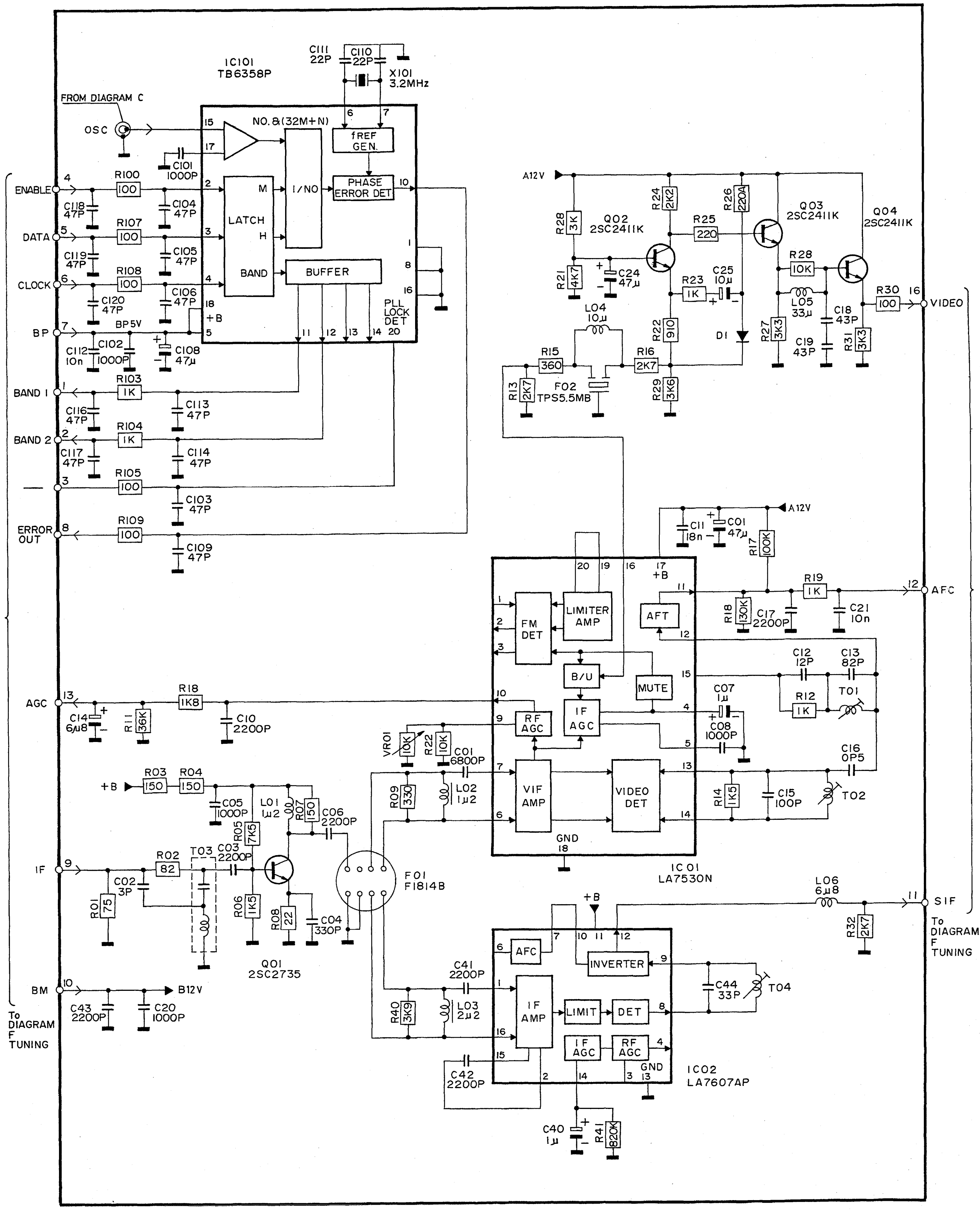
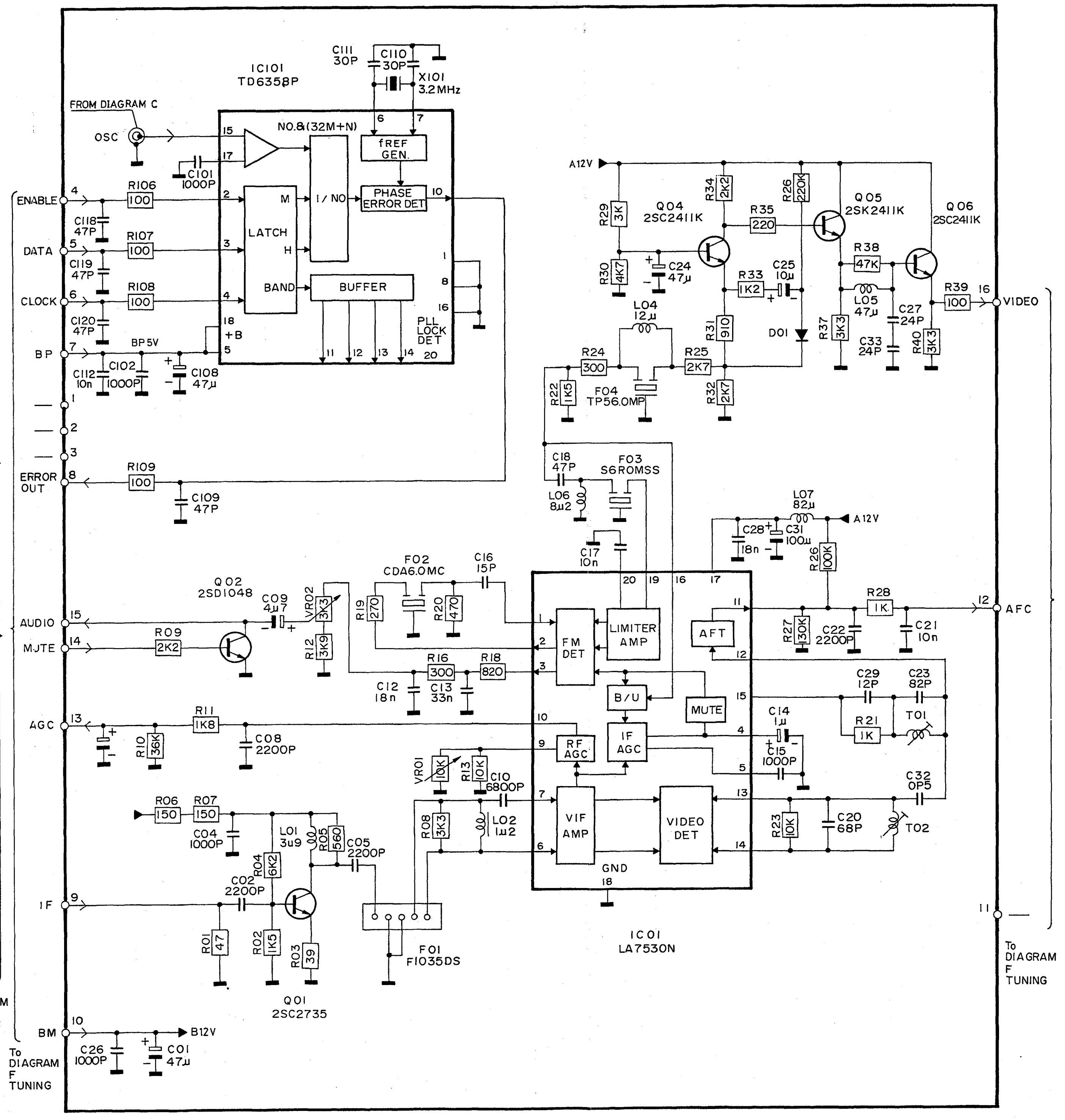

IC101
TB6358P
C111 22P
C110 22P
X101 3.2MHz
FROM DIAGRAM C
OSC
NO.8(32M+N)
fREF GEN.
PHASE ERROR DET
1/NO
LATCH
M
H
BAND
BUFFER
PLL LOCK DET
C101 1000P
ENABLE
DATA
CLOCK
BP
BAND 1
BAND 2
ERROR OUT
R100 100
R107 100
R108 100
R103 1K
R104 1K
R105 100
R109 100
C118 47P
C119 47P
C120 47P
C104 47P
C105 47P
C106 47P
C112 10n
C102 1000P
C108 47µ
BP5V
+B
C113 47P
C114 47P
C103 47P
C109 47P
C116 47P
C117 47P
A12V
R28 3K
R21 4K7
Q02 2SC2411K
C24 47µ
R24 2K2
R25 220
R26 220
Q03 2SC2411K
Q04 2SC2411K
R28 10K
R23 1K
C25 10µ
L05 33µ
C18 43P
C19 43P
R27 3K3
R31 3K3
R30 100
D1
R22 910
R29 3K6
R16 2K7
R15 360
L04 10µ
R13 2K7
F02 TPS5.5MB
VIDEO
AFC
SIF
C11 18n
C01 47µ
R17 100K
R18 130K
C17 2200P
R19 1K
C21 10n
LIMITER AMP
FM DET
AFT
B/U
MUTE
IF AGC
RF AGC
VIF AMP
VIDEO DET
GND
IC01 LA7530N
C12 12P
C13 82P
R12 1K
T01
C07 1µ
C08 1000P
C16 0P5
T02
C15 100P
R14 1K5
VR01 10K
R22 10K
C01 6800P
L02 1µ2
R09 330
AGC
R18 1K8
C14 6µ8
R11 36K
C10 2200P
+B
R03 150
R04 150
C05 1000P
L01 1µ2
R05 7K5
R07 150
C06 2200P
IF
R02 82
T03
C03 2200P
C02 3P
R01 75
R06 1K5
R08 22
C04 330P
Q01 2SC2735
F01 F1814B
L06 6µ8
R32 2K7
To DIAGRAM F TUNING
BM
B12V
C43 2200P
C20 1000P
C41 2200P
L03 2µ2
R40 3K9
AFC
INVERTER
IF AMP
LIMIT
DET
IF AGC
RF AGC
C44 33P
T04
C42 2200P
IC02 LA7607AP
C40 1µ
R41 820K

DIAGRAM B IF PACK PAL I


IC101
TD6358P
C111 30P
C110 30P
X101 3.2MHz
FROM DIAGRAM C
OSC
NO.8(32M+N)
fREF GEN.
PHASE ERROR DET
1/NO
LATCH
M
H
BAND
BUFFER
PLL LOCK DET
C101 1000P
ENABLE
DATA
CLOCK
BP
ERROR OUT
R106 100
R107 100
R108 100
R109 100
C118 47P
C119 47P
C120 47P
C112 10n
C102 1000P
C108 47µ
C109 47P
BP5V
+B
A12V
R29 3K
R30 4K7
Q04 2SC2411K
C24 47µ
R34 2K2
R35 220
R26 220K
Q05 2SK2411K
Q06 2SC2411K
R33 1K2
C25 10µ
D01
R38 47K
L05 47µ
C27 24P
C33 24P
R37 3K3
R40 3K3
R39 100
VIDEO
R31 910
R32 2K7
R24 300
R25 2K7
R22 1K5
L04 12µ
F04 TP56.0MP
C18 47P
F03 S6R0MSS
L06 8µ2
C17 10n
L07 82µ
C28 18n
C31 100µ
R26 100K
A12V
AUDIO
MUTE
Q02 2SD1048
C09 4µ7
VR02 3K3
R09 2K2
R12 3K9
R19 270
F02 CDA6.0MC
C16 15P
R20 470
R16 300
R18 820
C12 18n
C13 33n
LIMITER AMP
FM DET
AFT
B/U
MUTE
RF AGC
IF AGC
VIF AMP
VIDEO DET
GND
IC01 LA7530N
R27 130K
C22 2200P
R28 1K
C21 10n
AFC
C29 12P
C23 82P
R21 1K
T01
C14 1µ
C15 1000P
C32 0P5
C20 68P
R23 10K
T02
AGC
R10 36K
R11 1K8
C08 2200P
VR01 10K
R13 10K
C10 6800P
R08 3K3
L02 1µ2
R06 150
R07 150
C04 1000P
L01 3µ9
R05 560
C05 2200P
R04 6K2
C02 2200P
IF
R01 47
R02 1K5
R03 39
Q01 2SC2735
F01 F1035DS
BM
B12V
C26 1000P
C01 47µ
To DIAGRAM F TUNING

2-17
DIAGRAM C

DIAGRAM C TUNER PACK PAL B/G

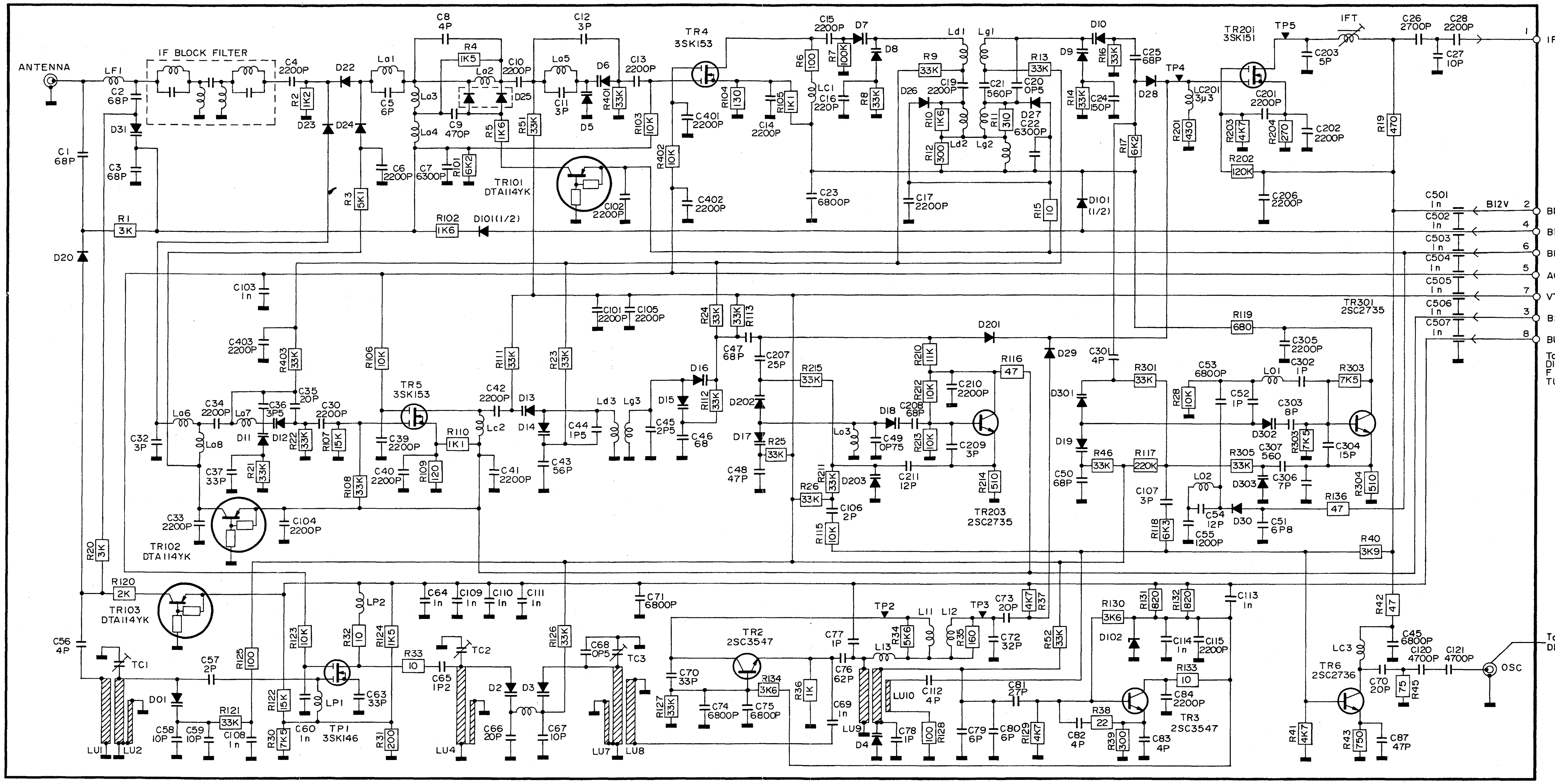

ANTENNA
LF1
IF BLOCK FILTER
C1 68P
C2 68P
C3 68P
D31
R1 3K
D20
C4 2200P
R2 1K2
D22
D23
D24
La1
La3
La4
C5 6P
C6 2200P
R3 5K1
C8 4P
R4 1K5
La2
D25
C9 470P
R5 1K6
C10 2200P
C7 6300P
R101 6K2
R102 1K6
D101 (1/2)
TR101 DTA114YK
C102 2200P
C12 3P
La5
C11 3P
D6
D5
R51 33K
R401 33K
R103 10K
C13 2200P
TR4 3SK153
C401 2200P
C402 2200P
R402 10K
R104 130
R105 1K1
C14 2200P
C15 2200P
R6 100
R7 100K
D7
D8
LC1
C16 220P
R8 33K
C23 6800P
Ld1
Lg1
R9 33K
D26
C19 2200P
R10 1K6
R12 300
Ld2
Lg2
C21 560P
R11 310
C20 0P5
C22 6300P
D27
R13 33K
C17 2200P
R15 10
D101 (1/2)
D10
D9
R14 33K
C24 150P
R16 33K
C25 68P
D28
R17 6K2
TP4
TR201 3SK151
TP5
C203 5P
LC201 3μ3
R201 430
C201 2200P
R203 4K7
R204 270
C202 2200P
R202 120K
C206 2200P
IFT
C26 2700P
C28 2200P
C27 10P
R19 470
IF
C501 1n
C502 1n
C503 1n
C504 1n
C505 1n
C506 1n
C507 1n
B12V
BM
BL
BH
AGC
VT
BS
BU
To DIAGRAM F TUNING
C103 1n
C403 2200P
R403 33K
R106 10K
R111 33K
R23 33K
C101 2200P
C105 2200P
R24 33K
R113 33K
C47 68P
C207 25P
D201
R210 11K
D29
C301 4P
R119 680
TR301 2SC2735
C305 2200P
Lo6
Lo7
Lo8
C34 2200P
C36 3P5
C35 20P
C30 2200P
D11
D12
R22 33K
R107 15K
TR5 3SK153
C42 2200P
D13
D14
Lc2
R110 1K1
C44 1P5
C43 56P
Ld3
Lg3
C45 2P5
C46 68
D15
D16
R112 33K
D202
D17
R25 33K
C48 47P
R215 33K
R116 47
R212 10K
C210 2200P
C208 68P
D18
Lo3
C49 0P75
R213 10K
C209 3P
R211 33K
D203
C211 12P
R26 33K
C106 2P
R115 10K
R214 510
TR203 2SC2735
R301 33K
C53 6800P
R28 10K
C52 1P
L01
C302 1P
R303 7K5
C303 8P
D302
R303 7K5
C304 15P
D301
D19
C50 68P
R46 33K
R117 220K
R305 33K
C307 560
D303
C306 7P
R304 510
C107 3P
L02
C54 12P
D30
C51 6P8
R136 47
R118 6K3
C55 1200P
R40 3K9
C32 3P
C37 33P
R21 33K
C39 2200P
C40 2200P
R109 120
R108 33K
C41 2200P
C33 2200P
TR102 DTA114YK
C104 2200P
R20 3K
R120 2K
TR103 DTA114YK
C56 4P
TC1
LU1
LU2
D01
C57 2P
C58 10P
C59 10P
C108 1n
R121 33K
R125 100
R123 10K
R122 15K
R30 7K5
C60 1n
TP1 3SK146
LP1
LP2
R32 10
C63 33P
R124 1K5
R31 200
C64 1n
C109 1n
C110 1n
C111 1n
R33 10
TC2
C65 1P2
LU4
D2
D3
C66 20P
C67 10P
R126 33K
C68 0P5
TC3
LU7
LU8
C71 6800P
C70 33P
R127 33K
C74 6800P
C75 6800P
R134 3K6
TR2 2SC3547
TP2
L11
L12
TP3
C73 20P
R37 4K7
C77 1P
R34 5K6
L13
R35 160
C72 32P
R52 33K
C76 62P
R36 1K
C69 1n
LU9
LU10
C112 4P
D4
C78 1P
R128 100
C79 6P
C80 6P
C81 27P
R129 4K7
R130 3K6
D102
R131 820
R132 820
C114 1n
C115 2200P
C113 1n
R133 10
C84 2200P
R38 22
C82 4P
R39 300
C83 4P
TR3 2SC3547
R42 47
LC3
C45 6800P
C120 4700P
C121 4700P
TR6 2SC2736
C70 20P
R45 75
OSC
To DIAGRAM B
R41 4K7
R43 750
C87 47P

DIAGRAM C TUNER PACK PAL I

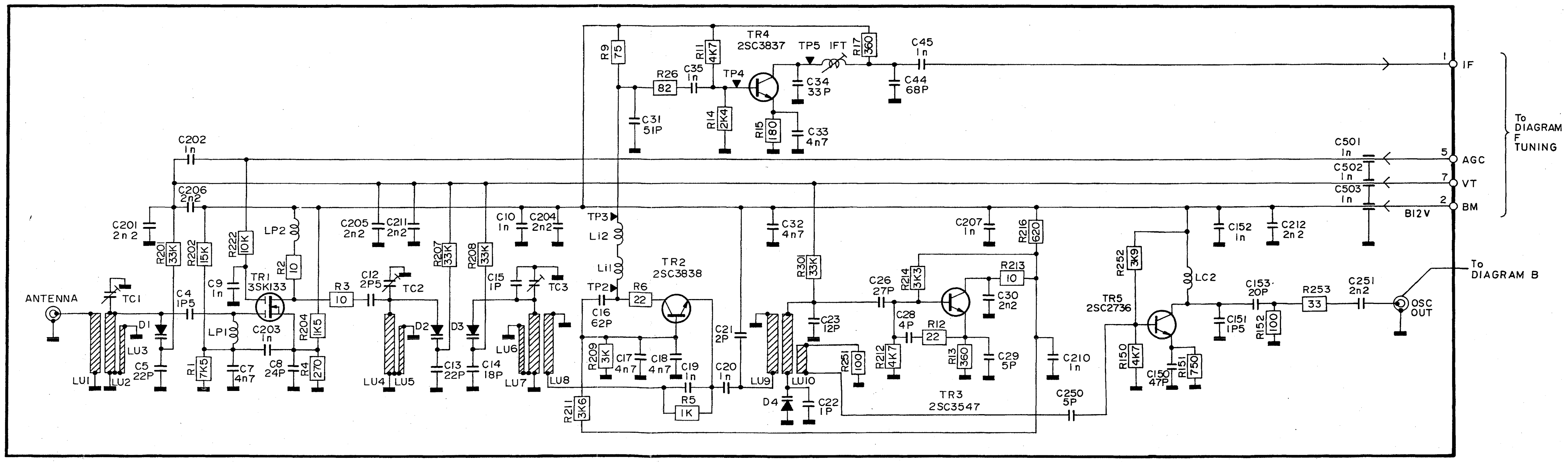

TR4 2SC3837
R9 75
R11 4K7
TP5
IFT
R17 560
C45 1n
IF
R26 82
C35 1n
TP4
C34 33P
C44 68P
C31 51P
R14 2K4
R15 180
C33 4n7
To DIAGRAM F TUNING
C501 1n
C502 1n
C503 1n
AGC
VT
BM
B12V
C202 1n
C206 2n2
C201 2n2
R20 33K
R202 15K
R222 10K
LP2
C205 2n2
C211 2n2
R207 33K
R208 33K
C10 1n
C204 2n2
TP3
L12
L11
R30 33K
C32 4n7
C207 1n
R216 620
C152 1n
C212 2n2
R2 10
C9 1n
TR1 3SK133
R3 10
C12 2P5
TC2
C15 1P
TC3
TR2 2SC3838
TP2
R6 22
C16 62P
C21 2P
C23 12P
C26 27P
R214 3K3
R213 10
C30 2n2
R252 3K9
LC2
C153 20P
R253 33
C251 2n2
OSC OUT
To DIAGRAM B
ANTENNA
TC1
C4 1P5
D1
LU1
LU2
LU3
C5 22P
LP1
R1 7K5
C7 4n7
C203 1n
C8 24P
R204 1K5
R4 270
LU4
LU5
D2
D3
C13 22P
C14 18P
LU6
LU7
LU8
R209 3K
C17 4n7
C18 4n7
C19 1n
C20 1n
R5 1K
R211 3K6
LU9
LU10
D4
C22 1P
R251 100
R212 4K7
C28 4P
R12 22
R13 360
C29 5P
TR3 2SC3547
C210 1n
C250 5P
TR5 2SC2736
R150 4K7
C150 47P
R151 750
C151 1P5
R152 100

DIAGRAM D INPUT SOCKET PANEL, REAR & RF SIGNAL

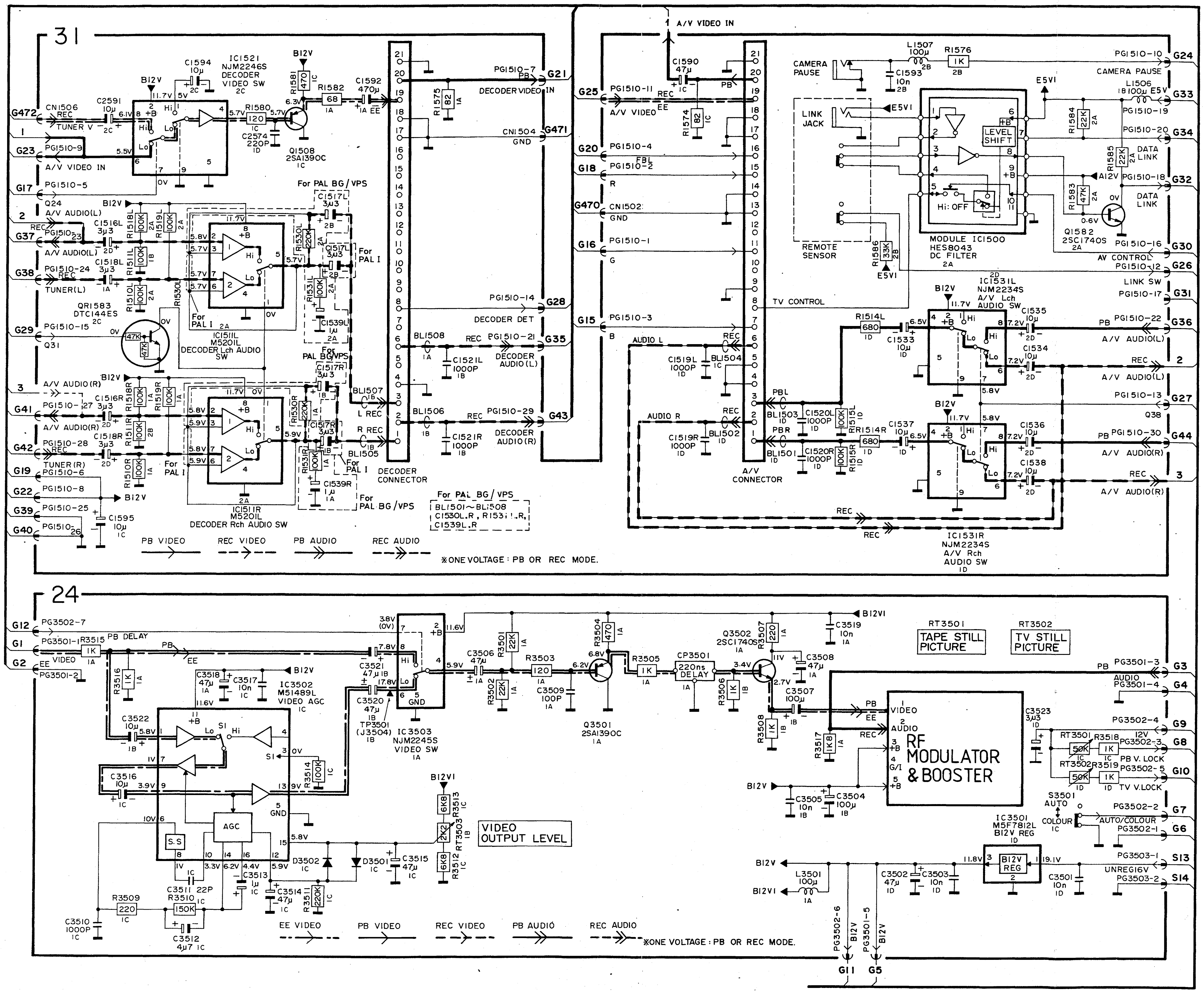

31
24
IC1521 NJM2246S DECODER VIDEO SW 2C
Q1508 2SA1390C 1C
IC1511L M5201L DECODER Lch AUDIO SW
IC1511R M5201L DECODER Rch AUDIO SW
QR1583 DTC144ES 2C
DECODER CONNECTOR
For PAL BG/VPS
BL1501~BL1508
C1530L,R, R1531L,R,
C1539L,R
A/V VIDEO IN
CAMERA PAUSE
LINK JACK
REMOTE SENSOR
MODULE IC1500 HES8043 DC FILTER 2A
LEVEL SHIFT
Hi: OFF
Q1582 2SC1740S 2A
DATA LINK
AV CONTROL
LINK SW
TV CONTROL
IC1531L NJM2234S A/V Lch AUDIO SW
IC1531R NJM2234S A/V Rch AUDIO SW 1D
A/V CONNECTOR
AUDIO L
AUDIO R
A/V AUDIO(L)
A/V AUDIO(R)
DECODER AUDIO (L)
DECODER AUDIO (R)
DECODER VIDEO IN
DECODER DET
TUNER V
TUNER(L)
TUNER (R)
PB VIDEO
REC VIDEO
PB AUDIO
REC AUDIO
※ONE VOLTAGE : PB OR REC MODE.
PB DELAY
IC3502 M51489L VIDEO AGC 1C
AGC
S.S
IC3503 NJM2245S VIDEO SW 1A
TP3501 (J3504)
Q3501 2SA1390C 1A
Q3502 2SC1740S 1A
CP3501 220ns DELAY
VIDEO OUTPUT LEVEL
RT3501 TAPE STILL PICTURE
RT3502 TV STILL PICTURE
RF MODULATOR & BOOSTER
IC3501 M5F7812L B12V REG 1D
S3501 AUTO COLOUR
AUTO/COLOUR
PB V. LOCK
TV V.LOCK
UNREG16V
EE VIDEO
B12V
B12V1
E5V1
A12V
G472
G23
G17
G37
G38
G29
G41
G42
G19
G22
G39
G40
G21
G471
G28
G35
G43
G25
G20
G18
G470
G16
G15
G24
G33
G34
G32
G30
G26
G31
G36
G27
G44
G12
G1
G2
G3
G4
G9
G8
G10
G7
G6
S13
S14
G11
G5

DIAGRAM E OPERATION CONTROL & REMOTE, SWITCH & OSD CONTROL PAL B/G

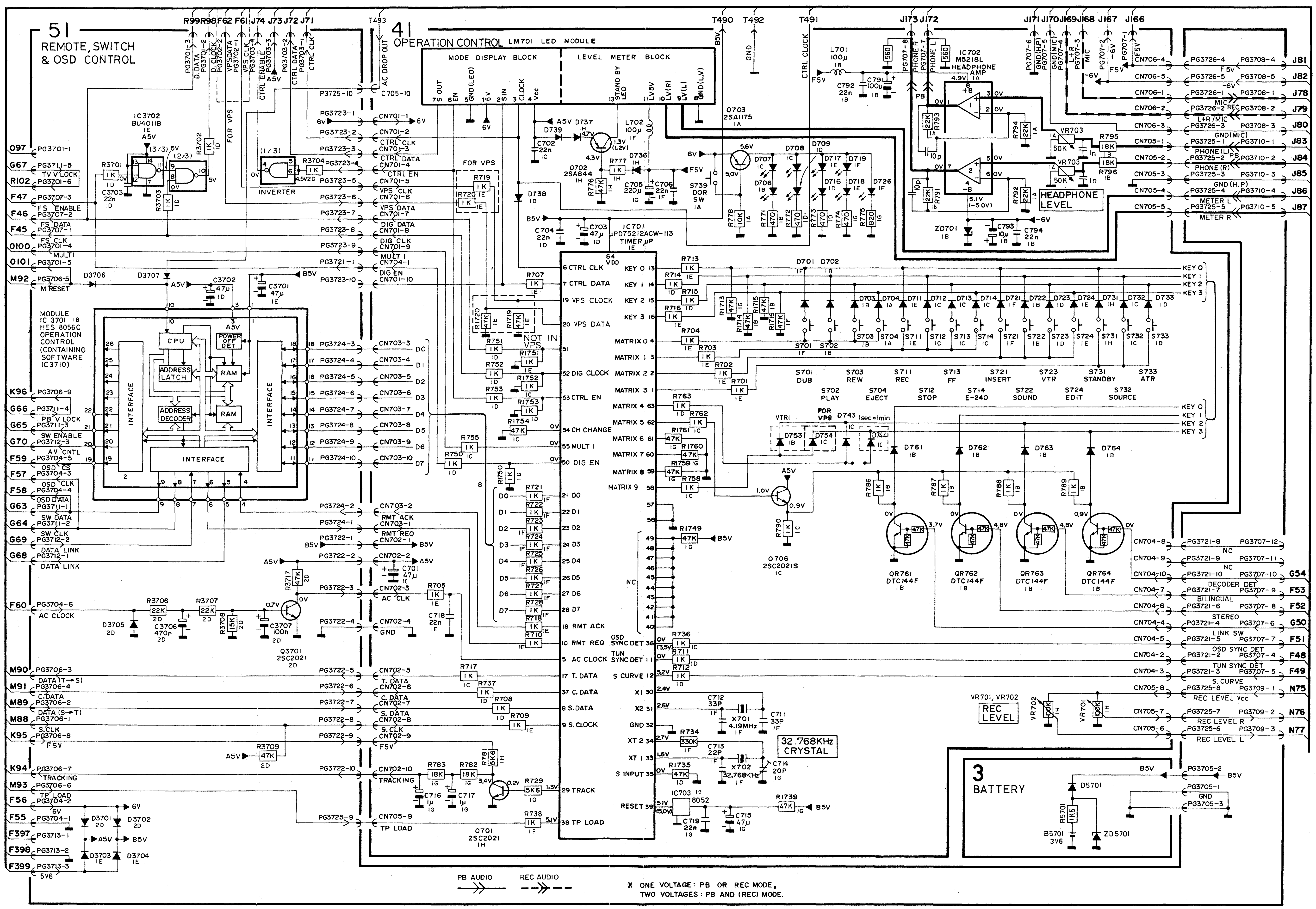

51
REMOTE, SWITCH & OSD CONTROL
41
OPERATION CONTROL
LM701 LED MODULE
MODE DISPLAY BLOCK
LEVEL METER BLOCK
IC3702 BU4011B
INVERTER
FOR VPS
MODULE IC 3701 HES 8056C OPERATION CONTROL (CONTAINING SOFTWARE IC3710)
CPU
POWER OFF DET
ADDRESS LATCH
RAM
ADDRESS DECODER
INTERFACE
IC701 µPD75212ACW-113 TIMER µP
IC702 M5218L HEADPHONE AMP
HEADPHONE LEVEL
REC LEVEL
32.768KHz CRYSTAL
3 BATTERY
S701 DUB
S702 PLAY
S703 REW
S704 EJECT
S711 REC
S712 STOP
S713 FF
S714 E-240
S721 INSERT
S722 SOUND
S723 VTR
S724 EDIT
S731 STANDBY
S732 SOURCE
S733 ATR
QR761 DTC144F
QR762 DTC144F
QR763 DTC144F
QR764 DTC144F
Q701 2SC2021
Q702 2SA844
Q703 2SA1175
Q706 2SC2021S
Q3701 2SC2021
X701 4.19MHz
X702 32.768KHz
IC703 8052
J81
J82
J78
J79
J80
J83
J84
J85
J86
J87
G54
F53
F52
G50
F51
F48
F49
N75
N76
N77
PB AUDIO
REC AUDIO
* ONE VOLTAGE: PB OR REC MODE,
TWO VOLTAGES: PB AND (REC) MODE.

DIAGRAM E OPERATION CONTROL & REMOTE, SWITCH & OSD CONTROL PAL I

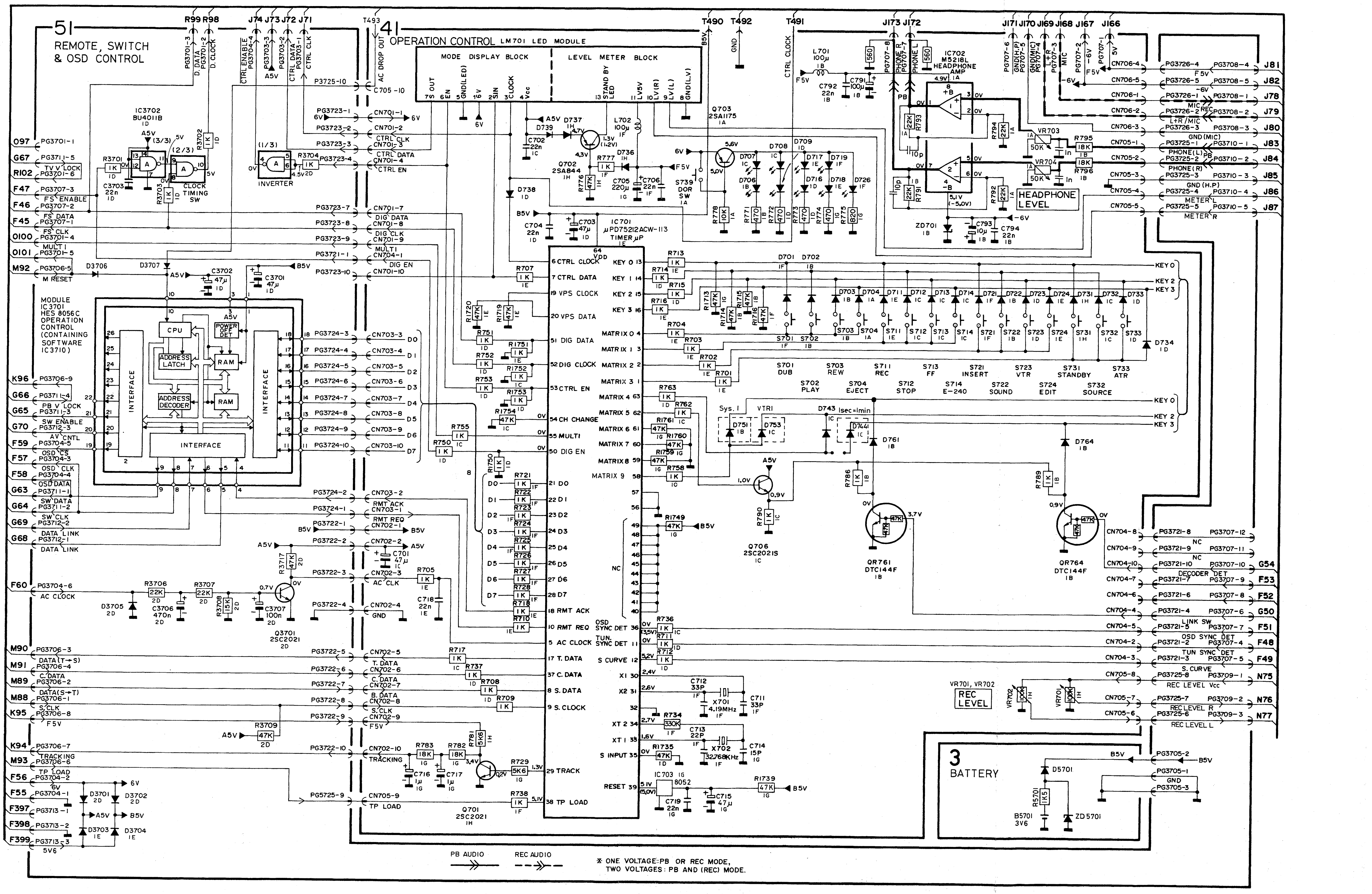

51 REMOTE, SWITCH & OSD CONTROL
41 OPERATION CONTROL LM701 LED MODULE
MODE DISPLAY BLOCK
LEVEL METER BLOCK
IC3702 BU4011B
INVERTER
CLOCK TIMING SW
MODULE IC3701 HES 8056C OPERATION CONTROL (CONTAINING SOFTWARE IC3710)
CPU
POWER OFF DET
ADDRESS LATCH
RAM
ADDRESS DECODER
INTERFACE
IC701 µPD75212ACW-113 TIMER µP
IC702 M5218L HEADPHONE AMP
HEADPHONE LEVEL
REC LEVEL
Q703 2SA1175
Q702 2SA844
Q706 2SC2021S
QR761 DTC144F
QR764 DTC144F
Q3701 2SC2021
Q701 2SC2021
IC703 8052
X701 4.19MHz
X702 32.768KHz
S701 DUB
S702 PLAY
S703 REW
S704 EJECT
S711 REC
S712 STOP
S713 FF
S714 E-240
S721 INSERT
S722 SOUND
S723 VTR
S724 EDIT
S731 STANDBY
S732 SOURCE
S733 ATR
Sys. I
VTRI
3 BATTERY
B5701 3V6
PB AUDIO
REC AUDIO
※ ONE VOLTAGE: PB OR REC MODE,
TWO VOLTAGES: PB AND (REC) MODE.

DIAGRAM F TUNING, STEREO DECODER, OSD & VPS PAL B/G

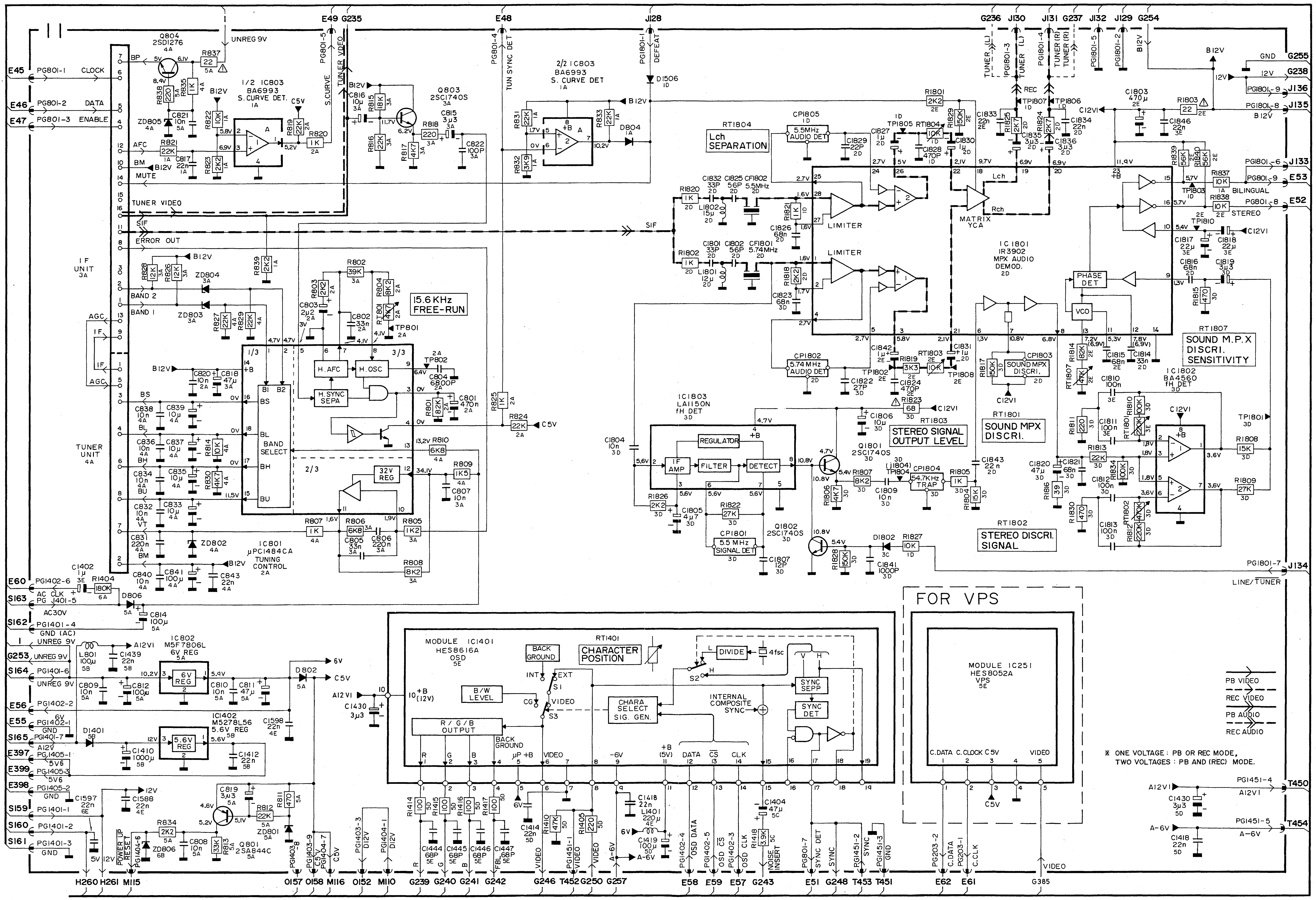

E49 G235
E48
J128
G236 J130 J131 G237 J132 J129 G254
E45 PG801-1 CLOCK
E46 PG801-2 DATA
E47 PG801-3 ENABLE
Q804 2SD1276
UNREG 9V
R837 22
1/2 IC803 BA6993 S. CURVE DET.
2/2 IC803 BA6993 S. CURVE DET
Q803 2SC1740S
TUNER VIDEO
SIF
ERROR OUT
BAND 2
BAND 1
AGC
IF
IF UNIT 3A
TUNER UNIT 4A
AFC
BM
MUTE
D1506
D804
15.6 KHz FREE-RUN
TP801
TP802
H. AFC
H. OSC
H. SYNC SEPA
BAND SELECT
32V REG
IC801 μPC1484CA TUNING CONTROL
Lch SEPARATION
CP1805 5.5MHz AUDIO DET
CP1802 5.74MHz AUDIO DET
LIMITER
MATRIX YCA
Lch
Rch
IC1801 IR3902 MPX AUDIO DEMOD.
PHASE DET
VCO
SOUND M.P.X DISCRI. SENSITIVITY
RT1807
SOUND MPX DISCRI.
RT1801
STEREO SIGNAL OUTPUT LEVEL
RT1803
STEREO DISCRI. SIGNAL
RT1802
IC1803 LA1150N fH DET
REGULATOR
IF AMP
FILTER
DETECT
Q1801 2SC1740S
Q1802 2SC1740S
CP1801 5.5 MHz SIGNAL DET
CP1804 4.7KHz TRAP
IC1802 BA4560 fH DET
TUNER (L)
TUNER (R)
REC
B12V
GND G255
12V G238
PG1801-9 J136
PG1801-8 J135
PG1801-6 J133
PG801-9 E53 BILINGUAL
PG801-8 E52 STEREO
PG1801-7 J134 LINE/TUNER
E60 PG1402-6
S163 PG1401-5 AC30V
S162 PG1401-4 GND (AC)
1 UNREG 9V
G253 UNREG 9V
S164 PG1401-6
E56 PG1402-2
E55 PG1402-1
S165 PG1401-7
E397 PG1405-1 5V6
E399 PG1405-3 5V6
E398 PG1405-2
S159 PG1401-1
S160 PG1401-2
S161 PG1401-3
IC802 M5F7806L 6V REG
IC1402 M5278L56 5.6V REG
Q801 2SA844C
ZD801
POWER UP RESET
6V
C5V
A12V1
MODULE IC1401 HES8616A OSD
BACK GROUND
CHARACTER POSITION
RT1401
B/W LEVEL
R/G/B OUTPUT
CHARA SELECT SIG. GEN.
INTERNAL COMPOSITE SYNC
DIVIDE
4fsc
SYNC SEPP
SYNC DET
S1 S2 S3
INT EXT
VIDEO
FOR VPS
MODULE IC251 HES8052A VPS
C.DATA C.CLOCK C5V VIDEO
PB VIDEO
REC VIDEO
PB AUDIO
REC AUDIO
※ ONE VOLTAGE : PB OR REC MODE,
TWO VOLTAGES : PB AND (REC) MODE.
PG1451-4 T450 A12V1
PG1451-5 T454 A-6V
H260 H261 M115 O157 O158 M116 O152 M110 G239 G240 G241 G242 G246 T452 G250 G257 E58 E59 E57 G243 E51 G248 T453 T451 E62 E61 G385

DIAGRAM F TUNING & OSD PAL I

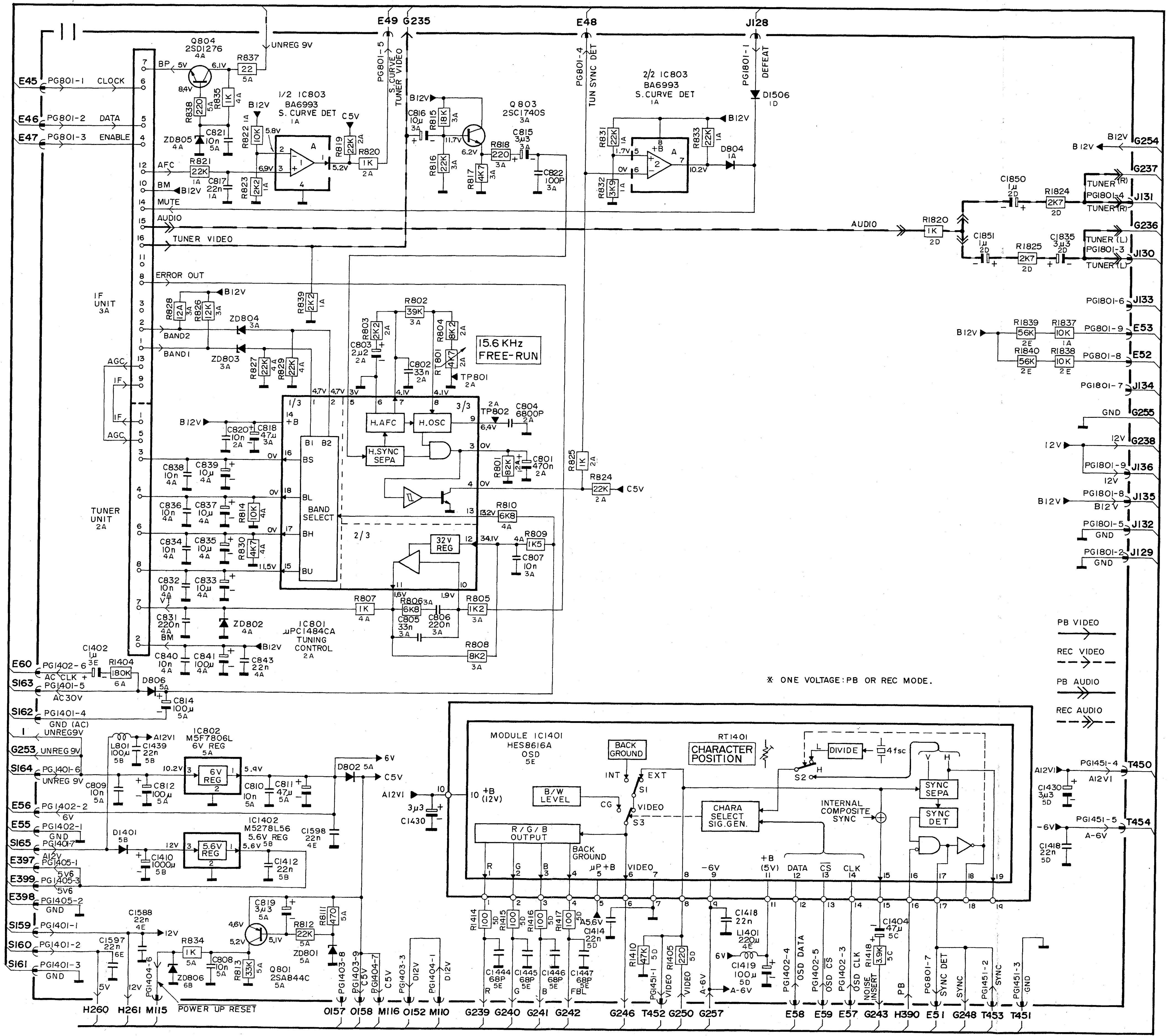

E49 G235
E48
J128
UNREG 9V
Q804
2SD1276
R837 22
1/2 IC803
BA6993
S. CURVE DET
2/2 IC803
BA6993
S. CURVE DET
Q803
2SC1740S
D1506
D804
TUN SYNC DET
DEFEAT
S. CURVE
TUNER VIDEO
E45 PG801-1 CLOCK
E46 PG801-2 DATA
E47 PG801-3 ENABLE
AFC
BM
MUTE
AUDIO
TUNER VIDEO
ERROR OUT
IF UNIT
TUNER UNIT
BAND2
BAND1
AGC
IF
ZD805
ZD804
ZD803
ZD802
R802 39K
15.6 KHz FREE-RUN
TP801
TP802
H.AFC
H.OSC
H.SYNC SEPA
BAND SELECT
32V REG
IC801
μPC1484CA
TUNING CONTROL
R824 22K
C5V
B12V
AUDIO
R1820 1K
C1850
C1851
R1824 2K7
R1825 2K7
C1835
TUNER (R)
TUNER (L)
G254
G237
J131
G236
J130
J133
E53
E52
J134
G255
G238
J136
J135
J132
J129
R1839 56K
R1837 10K
R1840 56K
R1838 10K
PB VIDEO
REC VIDEO
PB AUDIO
REC AUDIO
※ ONE VOLTAGE: PB OR REC MODE.
E60 PG1402-6 AC CLK
S163 PG1401-5 AC30V
S162 PG1401-4 GND (AC)
I UNREG9V
G253 UNREG 9V
S164 PG1401-6 UNREG 9V
E56 PG1402-2 6V
E55 PG1402-1 GND
S165 PG1401-7 A12V
E397 PG1405-1 5V6
E399 PG1405-3 5V6
E398 PG1405-2 GND
S159 PG1401-1
S160 PG1401-2
S161 PG1401-3 GND
C1402
R1404 180K
D806
C814
IC802
M5F7806L
6V REG
IC1402
M5278L56
5.6V REG
D1401
D802
6V
C5V
A12V1
C1430
Q801
2SA844C
ZD801
ZD806
R834 1K
POWER UP RESET
MODULE IC1401
HES8616A
OSD
BACK GROUND
CHARACTER POSITION
RT1401
DIVIDE
4fsc
B/W LEVEL
INT
EXT
S1
S2
S3
CG
VIDEO
R/G/B OUTPUT
CHARA SELECT SIG.GEN.
INTERNAL COMPOSITE SYNC
SYNC SEPA
SYNC DET
DATA
CS
CLK
T450
T454
PG1451-4
PG1451-5
A-6V
C1418
L1401
C1419
C1404
R1418
R1410
R1414
R1415
R1416
R1417
C1444
C1445
C1446
C1447
H260 H261 M115
O157 O158 M116 O152 M110
G239 G240 G241 G242
G246 T452 G250 G257
E58 E59 E57 G243 H390 E51 G248 T453 T451

DIAGRAM G AUDIO & VIDEO SIGNAL SWITCH

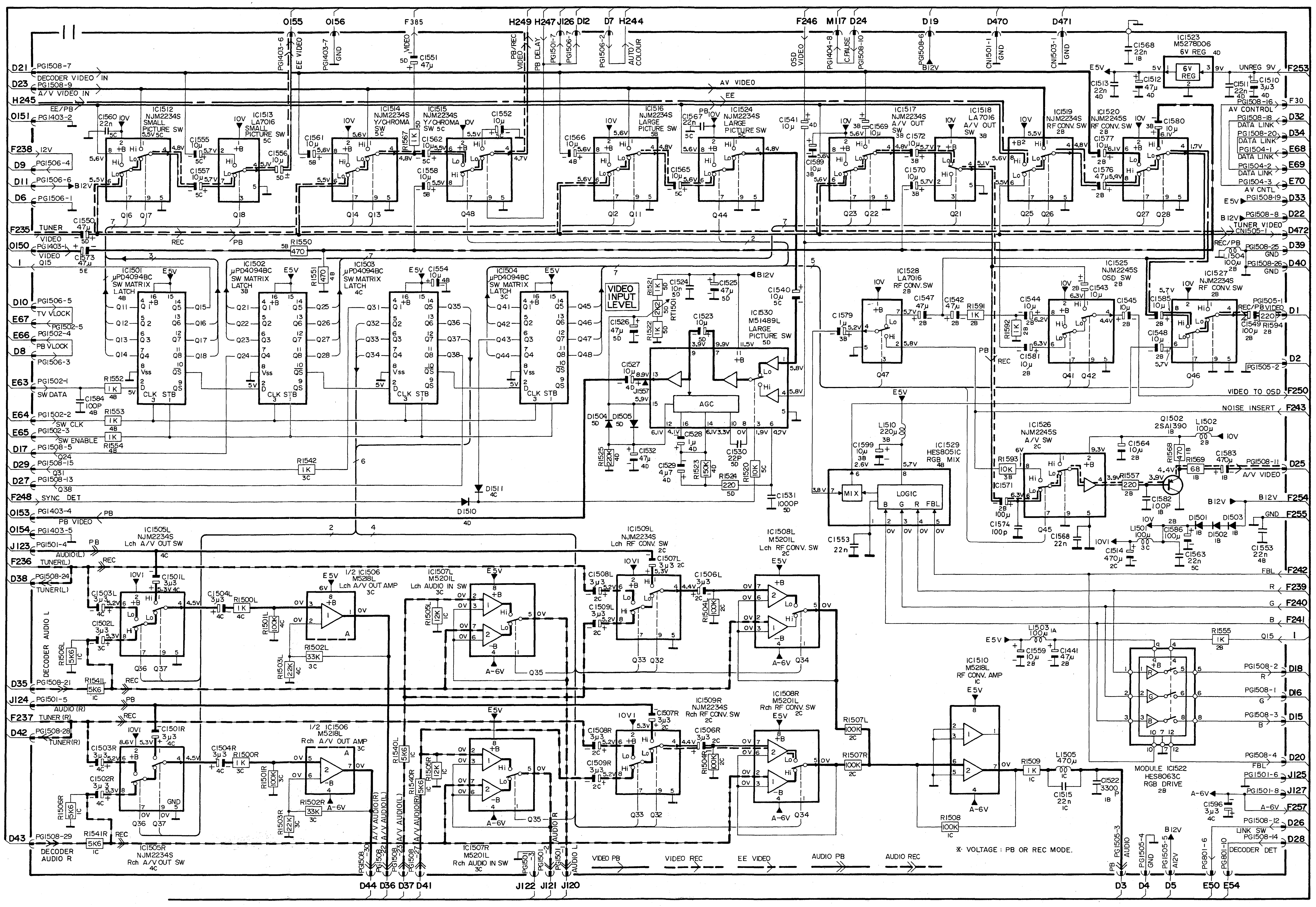
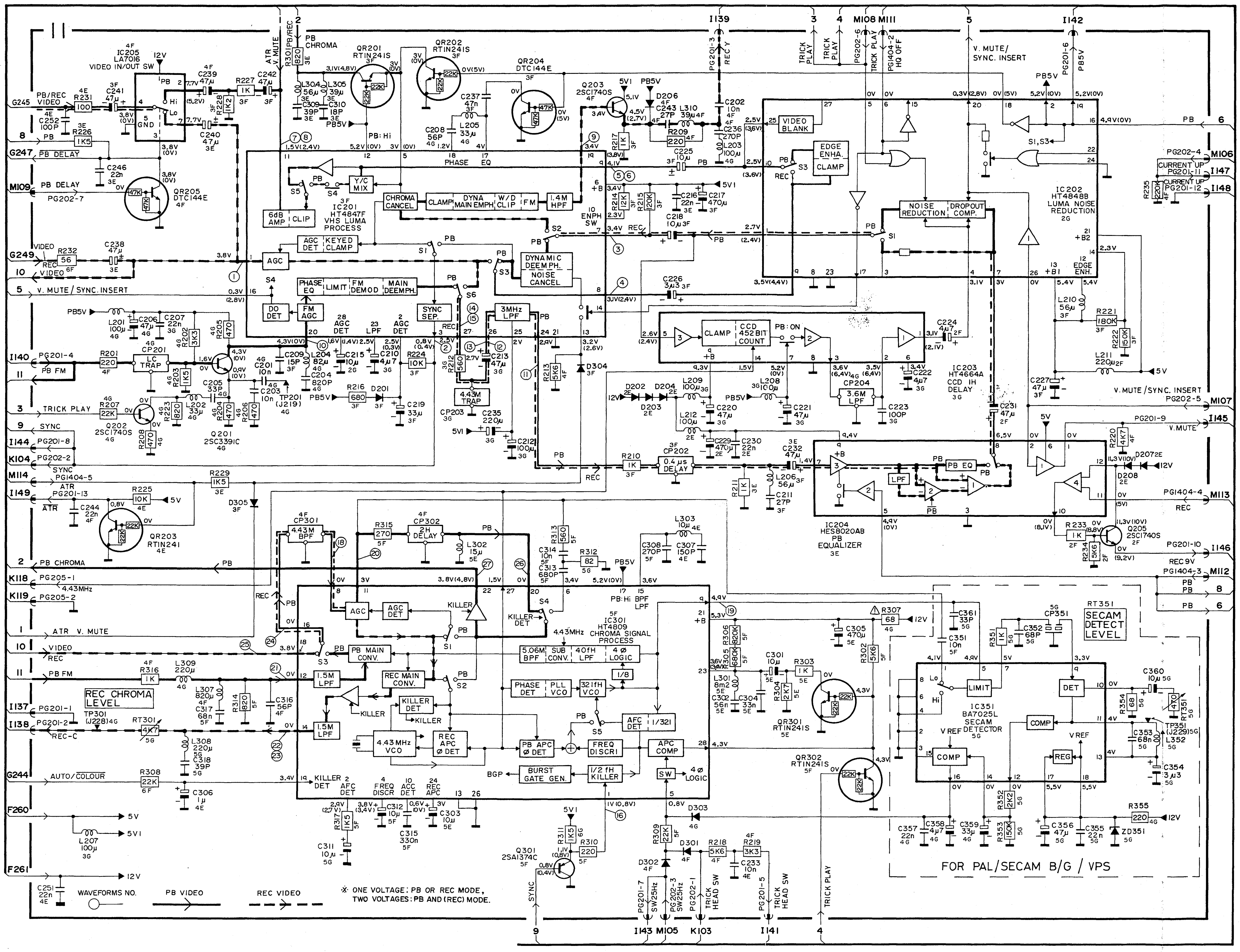
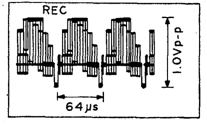

IC1512 NJM2234S SMALL PICTURE SW
IC1513 LA7016 SMALL PICTURE SW
IC1514 NJM2234S Y/CHROMA SW
IC1515 NJM2234S Y/CHROMA SW
IC1516 NJM2234S LARGE PICTURE SW
IC1524 NJM2234S LARGE PICTURE SW
IC1517 NJM2234S A/V OUT SW
IC1518 LA7016 A/V OUT SW
IC1519 NJM2234S RF CONV. SW
IC1520 NJM2245S RF CONV. SW
IC1523 M5278D06 6V REG
IC1501 µPD4094BC SW MATRIX LATCH
IC1502 µPD4094BC SW MATRIX LATCH
IC1503 µPD4094BC SW MATRIX LATCH
IC1504 µPD4094BC SW MATRIX LATCH
VIDEO INPUT LEVEL
IC1530 M51489L LARGE PICTURE SW
AGC
IC1528 LA7016 RF CONV. SW
IC1525 NJM2245S OSD SW
IC1527 NJM2234S RF CONV. SW
IC1526 NJM2245S A/V SW
IC1529 HES8051C RGB MIX
MIX
LOGIC
Q1502 2SA1390
IC1505L NJM2234S Lch A/V OUT SW
1/2 IC1506 M5218L Lch A/V OUT AMP
IC1507L M5201L Lch AUDIO IN SW
IC1509L NJM2234S Lch RF CONV. SW
IC1508L M5201L Lch RF CONV. SW
IC1505R NJM2234S Rch A/V OUT SW
1/2 IC1506 M5218L Rch A/V OUT AMP
IC1507R M5201L Rch AUDIO IN SW
IC1509R NJM2234S Rch RF CONV. SW
IC1508R M5201L Rch RF CONV. SW
IC1510 M5218L RF CONV. AMP
MODULE IC1522 HES8063C RGB DRIVE
DECODER AUDIO L
DECODER AUDIO R
D21 DECODER VIDEO IN
D23 A/V VIDEO IN
H245 EE/PB
F235 TUNER VIDEO
F248 SYNC DET
O153 PB VIDEO
F236 TUNER(L)
F237 TUNER (R)
F253 UNREG 9V
F30 AV CONTROL
D32 DATA LINK
D34 DATA LINK
E68 DATA LINK
E69 DATA LINK
E70 AV CNTL
D472 TUNER VIDEO
D1 REC/PB VIDEO
F250 VIDEO TO OSD
F243 NOISE INSERT
D25 A/V VIDEO
F254 B12V
F255 GND
F242 FBL
F239 R
F240 G
F241 B
D28 DECODER DET
AV VIDEO
EE
REC
PB
O155 EE VIDEO
F246 OSD VIDEO
M117 C.PAUSE
H244 AUTO/COLOUR
VIDEO PB
VIDEO REC
EE VIDEO
AUDIO PB
AUDIO REC
※ VOLTAGE : PB OR REC MODE.

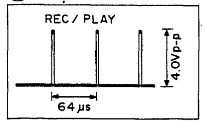
DIAGRAM H Y/CHROMA


IC205 LA7016 VIDEO IN/OUT SW
IC201 HT4847F VHS LUMA PROCESS
IC202 HT4848B LUMA NOISE REDUCTION
IC203 HT4664A CCD 1H DELAY
IC204 HES8020AB PB EQUALIZER
IC301 HT4809 CHROMA SIGNAL PROCESS
IC351 BA7025L SECAM DETECTOR
QR201 RTIN241S
QR202 RTIN241S
QR203 RTIN241
QR204 DTC144E
QR205 DTC144E
Q201 2SC3391C
Q202 2SC1740S
Q203 2SC1740S
Q205 2SC1740S
Q301 2SA1374C
QR301 RTIN241S
QR302 RTIN241S
G245 PB/REC VIDEO
8 PB
G247 PB DELAY
M109 PB DELAY PG202-7
G249 VIDEO REC
10 VIDEO
5 V. MUTE/SYNC. INSERT
I140 PG201-4
11 PB FM
3 TRICK PLAY
9 SYNC
I144 PG201-8
K104 PG202-2
M114 SYNC PG1404-5
I149 ATR PG201-13
2 PB CHROMA
K118 PG205-1 4.43MHz
K119 PG205-2
1 ATR V. MUTE
10 VIDEO REC
11 PB FM
I137 PG201-1
I138 PG201-2 REC-C
G244 AUTO/COLOUR
F260 5V 5V1
F261 12V
REC CHROMA LEVEL
6dB AMP
CLIP
AGC
Y/C MIX
CHROMA CANCEL
CLAMP
DYNA MAIN EMPH
W/D CLIP
FM
1.4M HPF
AGC DET
KEYED CLAMP
DYNAMIC DEEMPH.
NOISE CANCEL
PHASE EQ
LIMIT
FM DEMOD
MAIN DEEMPH.
DO DET
FM AGC
SYNC SEP.
3MHz LPF
4.43M TRAP
LC TRAP
VIDEO BLANK
EDGE ENHA.
CLAMP
NOISE REDUCTION
DROPOUT COMP.
CCD 452 BIT COUNT
3.6M LPF
0.4μs DELAY
LPF
PB EQ
4.43M BPF
2H DELAY
AGC DET
KILLER
KILLER DET
PB MAIN CONV.
REC MAIN CONV.
1.5M LPF
KILLER DET
4.43MHz VCO
REC APC Ø DET
5.06M BPF
SUB CONV.
40fH LPF
4 Ø LOGIC
1/8
PHASE DET
PLL VCO
321fH VCO
AFC DET
1/321
PB APC Ø DET
FREQ DISCRI
APC COMP
BURST GATE GEN.
1/2 fH KILLER
SW
4Ø LOGIC
BGP
SECAM DETECT LEVEL
RT351
LIMIT
DET
COMP
REG
V REF
FOR PAL/SECAM B/G / VPS
I139 PG201-3 REC Y
M108 PG202-6 TRICK PLAY
M111 PG1404-2 HQ OFF
I142 PG201-6 PB5V
V. MUTE/ SYNC. INSERT
6 PB
M106 PG202-4 CURRENT UP PG201-11
I147 CURRENT UP PG201-12
I148
M107 V. MUTE/SYNC. INSERT PG202-5
I145 PG201-9 V.MUTE
M113 PG1404-4 REC
I146 PG201-10 REC 9V
M112 PG1404-3
8 PB
6 PB
9 SYNC
I143 PG201-7 SW25Hz
M105 PG202-3 SW25Hz
K103 PG202-1 TRICK HEAD SW
I141 PG201-5 TRICK HEAD SW
4 TRICK PLAY
WAVEFORMS NO.
PB VIDEO
REC VIDEO
※ ONE VOLTAGE: PB OR REC MODE, TWO VOLTAGES: PB AND (REC) MODE.

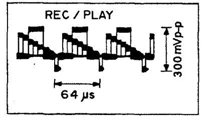
① IC201-1



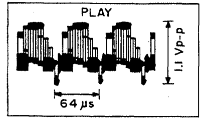
② IC201-3



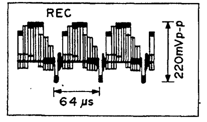
③ IC201-7



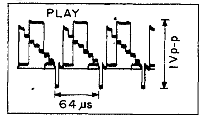
④ IC201-8



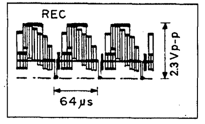
⑤ IC201-9



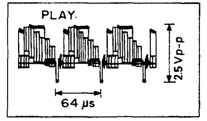
⑥ IC201-9



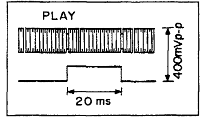
⑦ IC201-11



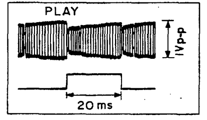
⑧ IC201-11



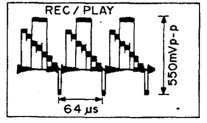
⑨ IC201-19



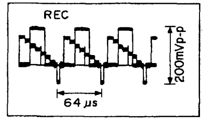
⑩ IC201-20



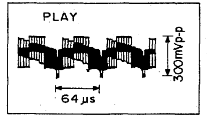
⑪ IC201-24



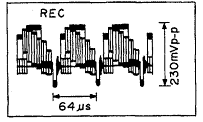
⑫ IC201-26



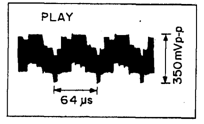
⑬ IC201-26



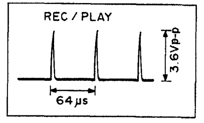
⑭ IC201-27



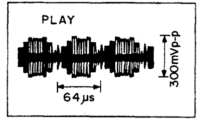
⑮ IC201-27



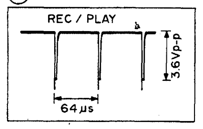
⑯ IC301-1



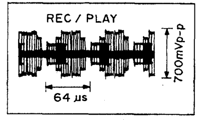
⑱ IC301-8



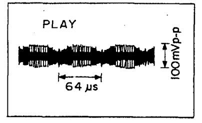
⑲ IC301-9



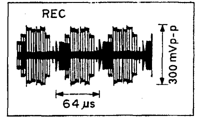
⑳ IC301-11



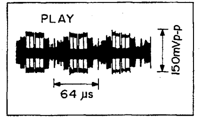
㉑ IC301-12



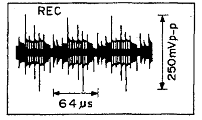
㉒ IC301-14



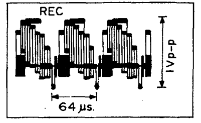
㉓ IC301-14



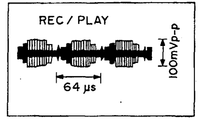
㉔ IC301-16



㉕ IC301-18



㉖ IC301-20



㉗ IC301-22

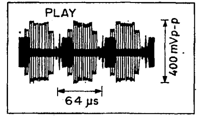
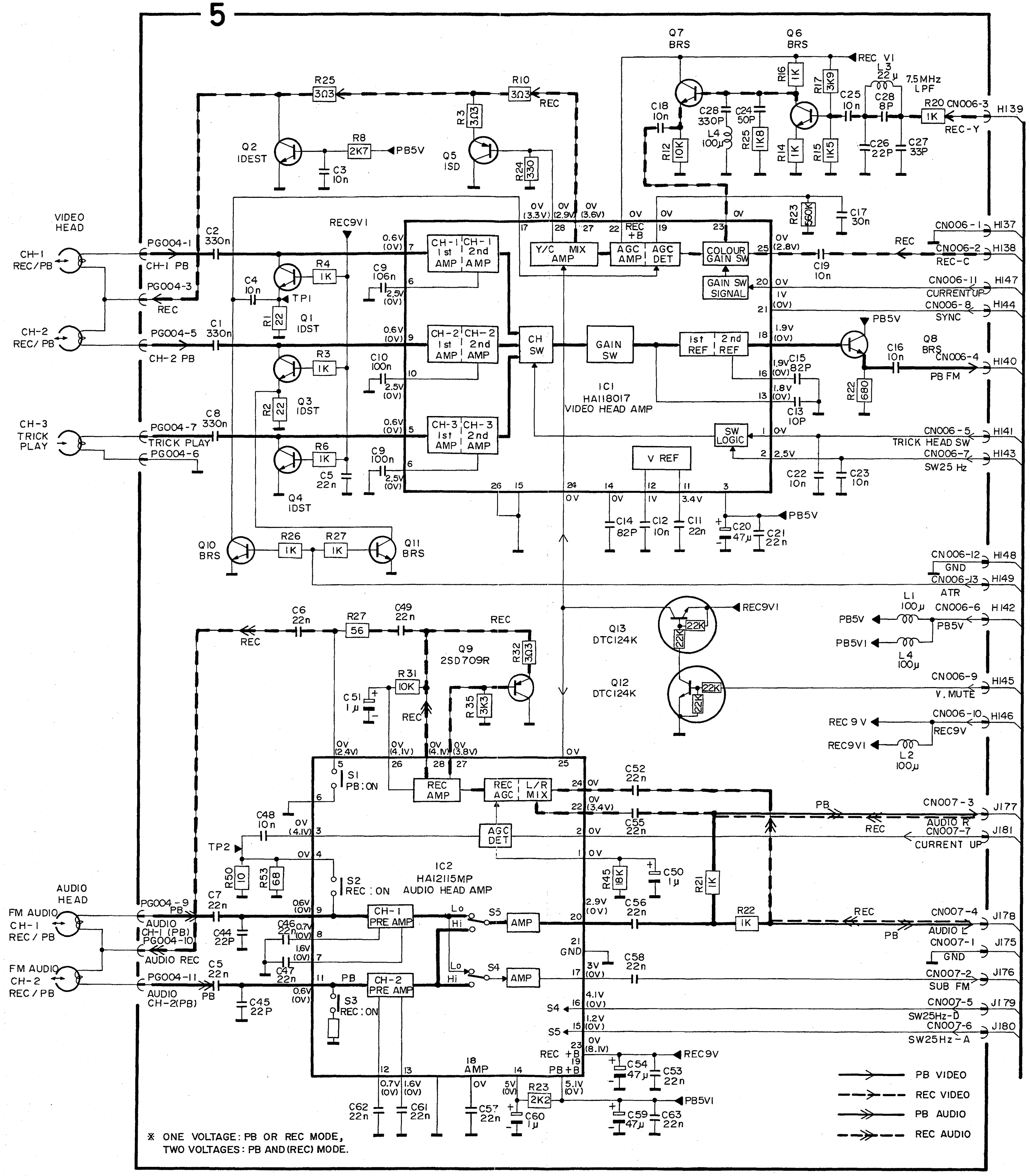


DIAGRAM I PRE/REC AMPLIFIER


5
VIDEO HEAD
CH-1 REC/PB
CH-2 REC/PB
CH-3 TRICK PLAY
AUDIO HEAD
FM AUDIO CH-1 REC/PB
FM AUDIO CH-2 REC/PB
IC1 HA118017 VIDEO HEAD AMP
CH-1 1st AMP
CH-1 2nd AMP
CH-2 1st AMP
CH-2 2nd AMP
CH-3 1st AMP
CH-3 2nd AMP
Y/C MIX AMP
AGC AMP
AGC DET
REC +B
COLOUR GAIN SW
GAIN SW SIGNAL
CH SW
GAIN SW
1st REF
2nd REF
SW LOGIC
V REF
IC2 HA12115MP AUDIO HEAD AMP
REC AMP
REC AGC
L/R MIX
AGC DET
CH-1 PRE AMP
CH-2 PRE AMP
AMP
S1 PB:ON
S2 REC:ON
S3 REC:ON
S4
S5
Q1 IDST
Q2 IDEST
Q3 IDST
Q4 IDST
Q5 ISD
Q6 BRS
Q7 BRS
Q8 BRS
Q9 2SD709R
Q10 BRS
Q11 BRS
Q12 DTC124K
Q13 DTC124K
7.5MHz LPF
REC-Y
REC-C
CURRENT UP
SYNC
PB FM
TRICK HEAD SW
SW25 Hz
GND
ATR
V. MUTE
AUDIO R
AUDIO L
SUB FM
SW25Hz-D
SW25Hz-A
PB5V
PB5V1
REC9V
REC9V1
H139
H137
H138
H147
H144
H140
H141
H143
H148
H149
H142
H145
H146
J177
J181
J178
J175
J176
J179
J180
PB VIDEO
REC VIDEO
PB AUDIO
REC AUDIO
※ ONE VOLTAGE: PB OR REC MODE,
TWO VOLTAGES: PB AND(REC) MODE.

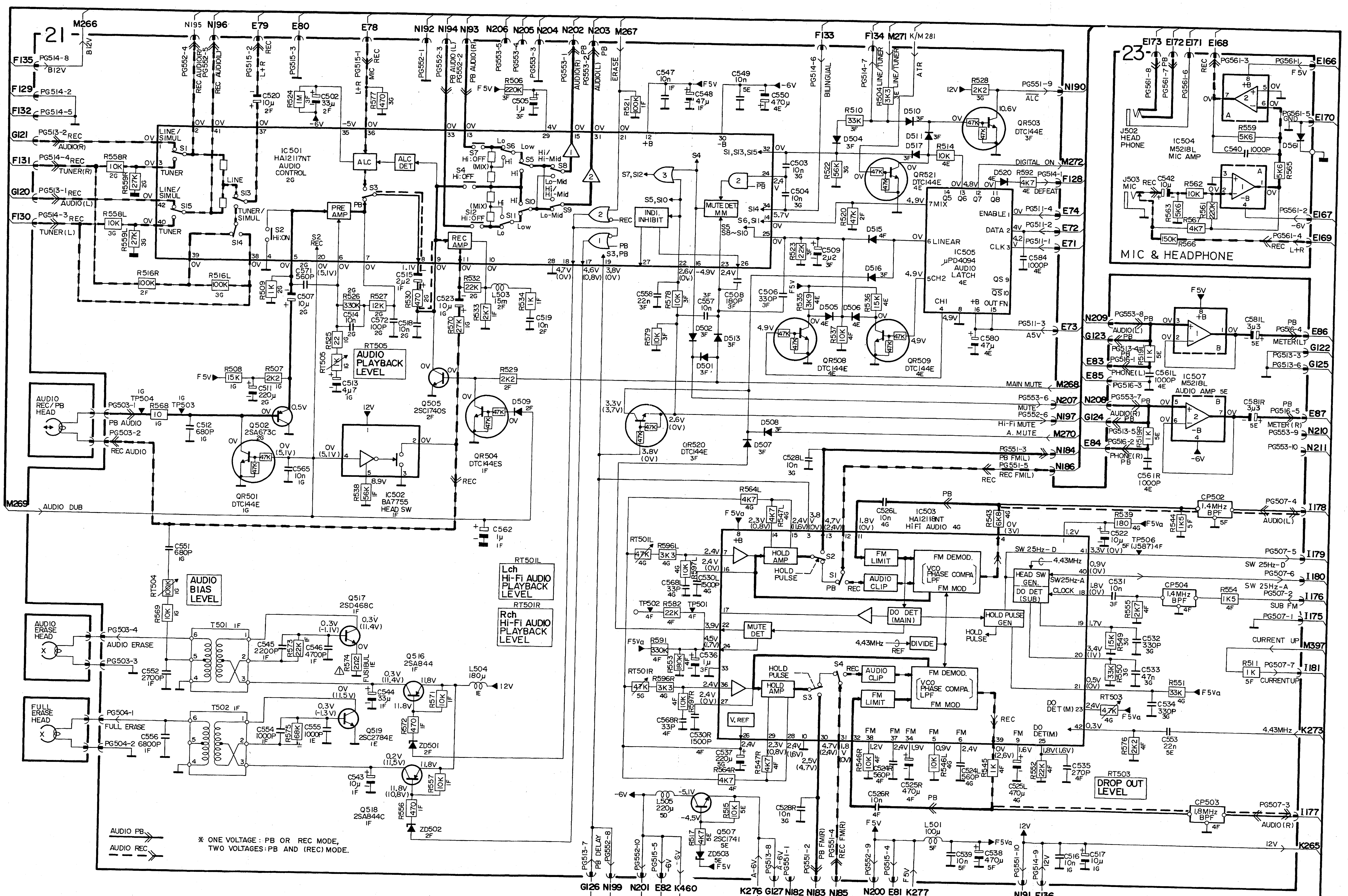

21
23
IC501
HA12117NT
AUDIO
CONTROL
ALC
ALC DET
PRE AMP
REC AMP
LINE/SIMUL
TUNER
TUNER/SIMUL
IC502
BA7755
HEAD SW
IC503
HA12118NT
HI FI AUDIO
IC504
M5218L
MIC AMP
IC505
μPD4094
AUDIO LATCH
IC507
M5218L
AUDIO AMP
AUDIO REC/PB HEAD
AUDIO ERASE HEAD
FULL ERASE HEAD
AUDIO ERASE
FULL ERASE
PB AUDIO
REC AUDIO
AUDIO DUB
T501
T502
Q502
2SA673C
Q505
2SC1740S
QR501
DTC144E
QR504
DTC144ES
Q516
2SA844
Q517
2SD468C
Q518
2SA844C
Q519
2SC2784E
Q507
2SC1741
QR503
DTC144E
QR508
DTC144E
QR509
DTC144E
QR520
DTC144E
QR521
DTC144E
AUDIO BIAS LEVEL
AUDIO PLAYBACK LEVEL
RT505
RT504
RT501L
Lch
Hi-Fi AUDIO
PLAYBACK
LEVEL
RT501R
Rch
Hi-Fi AUDIO
PLAYBACK
LEVEL
RT503
DROP OUT
LEVEL
MIC & HEADPHONE
J502 HEAD PHONE
J503 MIC
MUTE DET MM
INDI. INHIBIT
HOLD AMP
HOLD PULSE
FM LIMIT
AUDIO CLIP
FM DEMOD.
VCO
PHASE COMPA.
LPF
FM MOD
DO DET (MAIN)
HOLD PULSE GEN
HEAD SW GEN.
DO DET (SUB)
MUTE DET
DIVIDE
V.REF
CP502
1.4MHz BPF
CP503
1.8MHz BPF
CP504
1.4MHz BPF
MAIN MUTE
Hi-Fi MUTE
A. MUTE
DIGITAL ON
ALC
DEFEAT
ENABLE
DATA
CLK
ATR
BILINGUAL
ERASE
METER(L)
METER(R)
AUDIO(L)
AUDIO(R)
SW 25Hz-D
SW 25Hz-A
SUB FM
CURRENT UP
4.43MHz
12V
F5V
-6V
M266
N195
N196
E79
E80
E78
N192
N194
N193
N206
N205
N204
N202
N203
M267
F133
F134
M271
K/M 281
N190
M272
F128
E74
E72
E71
E73
M268
N207
N197
M270
N184
N186
F135
F129
F132
G121
F131
G120
F130
M269
E173
E172
E171
E168
E166
E170
E167
E169
N209
G123
E83
E85
N208
G124
E84
E86
G122
G125
E87
N210
N211
I178
I179
I180
I176
I175
M397
I181
K273
I177
K265
G126
N199
N201
E82
K460
K276
G127
N182
N183
N185
N200
E81
K277
N191
F136
AUDIO PB
AUDIO REC
※ ONE VOLTAGE : PB OR REC MODE,
TWO VOLTAGES: PB AND (REC) MODE.

DIAGRAM K SERVO (○ = For oscilloscope pictures see page 2-28)

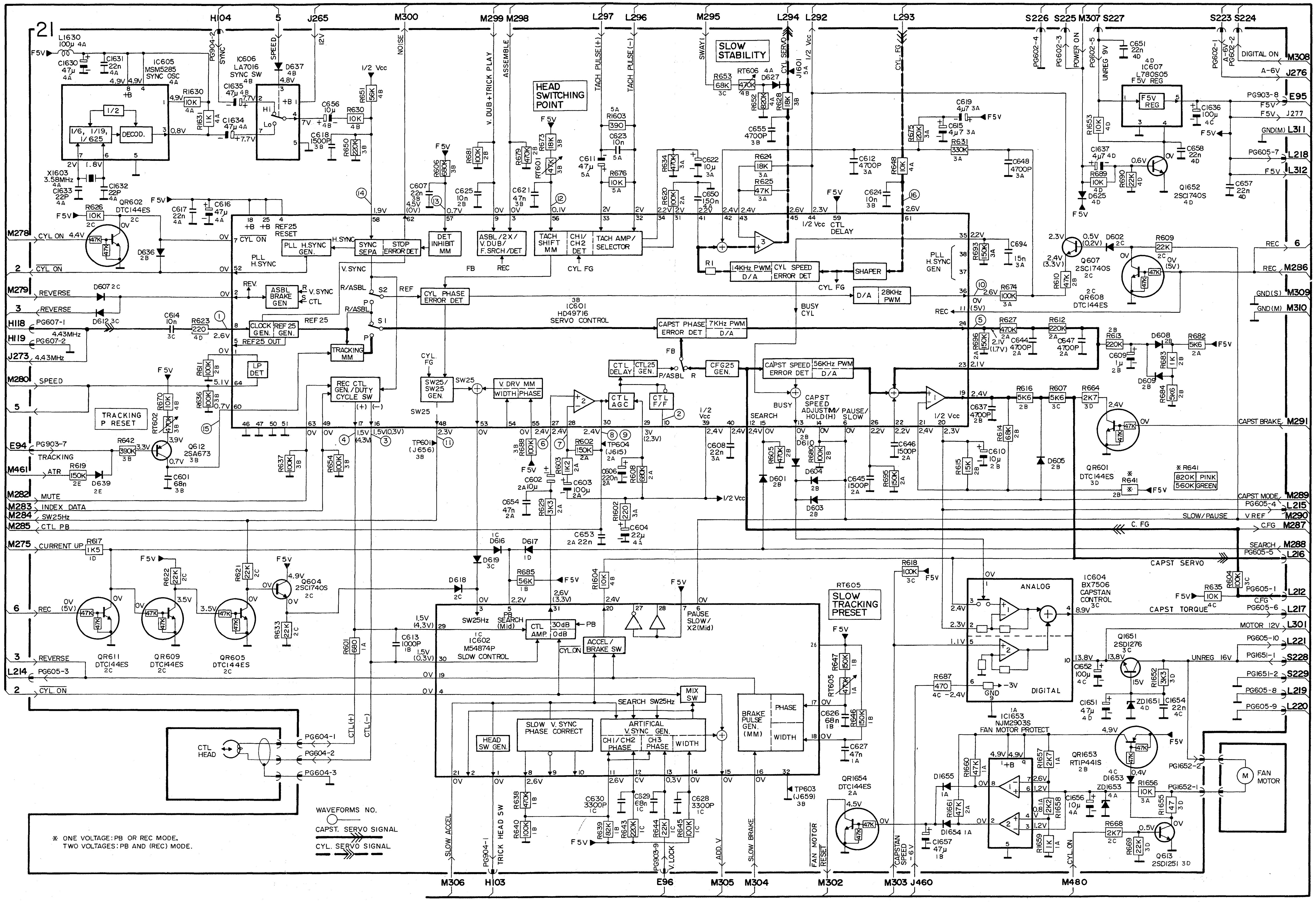
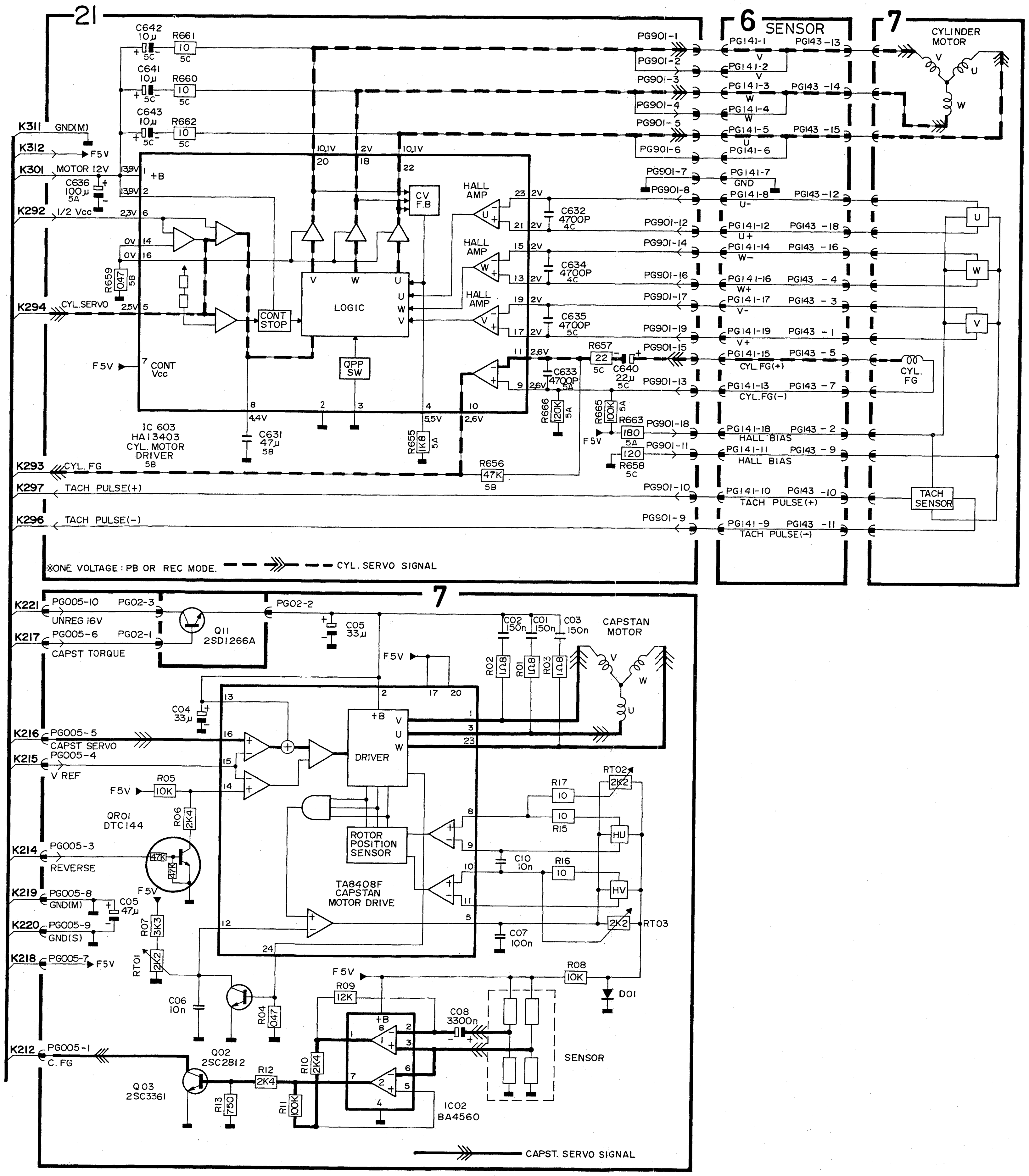
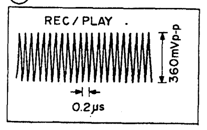

21
H104
5
J265
M300
M299
M298
L297
L296
M295
L294
L292
L293
S226
S225
M307
S227
S223
S224
IC605 MSM5285 SYNC OSC
1/2
1/6, 1/19, 1/625
DECOD.
X1603 3.58MHz
IC606 LA7016 SYNC SW
SYNC
SPEED
NOISE
V. DUB+TRICK PLAY
ASSEMBLE
HEAD SWITCHING POINT
TACH PULSE(+)
TACH PULSE(−)
SWAY
SLOW STABILITY
CYL SERVO
1/2 Vcc
CYL. FG
POWER ON
UNREG 9V
DIGITAL ON
A-6V
IC607 L78O5O5 F5V REG
M308
J276
E95
J277
L311
L218
L312
QR602 DTC144ES
M278 CYL ON
2 CYL ON
M279 REVERSE
3 REVERSE
H118 PG607-1
H119 PG607-2
4.43MHz
J273
M280 SPEED
5
TRACKING P RESET
E94 PG903-7 TRACKING
M461 ATR
Q612 2SA673
M282 MUTE
M283 INDEX DATA
M284 SW25Hz
M285 CTL PB
M275 CURRENT UP
6 REC
3 REVERSE
L214 PG605-3
2 CYL. ON
QR611 DTC144ES
QR609 DTC144ES
QR605 DTC144ES
Q604 2SC1740S
IC601 HD49716 SERVO CONTROL
PLL H.SYNC GEN.
SYNC SEPA
STOP ERROR DET
DET INHIBIT MM
ASBL/2X/ V.DUB/ F.SRCH/DET
TACH SHIFT MM
CH1/ CH2 DET
TACH AMP/ SELECTOR
ASBL BRAKE GEN
CLOCK GEN.
REF 25 GEN.
REF25 OUT
TRACKING MM
LP DET
REC CTL GEN./DUTY CYCLE SW
SW25/ SW25 GEN.
V. DRV MM
WIDTH PHASE
CTL AGC
CTL F/F
CTL DELAY
CTL25 GEN.
CYL PHASE ERROR DET
14KHz PWM D/A
CYL SPEED ERROR DET
SHAPER
D/A
28KHz PWM
CAPST PHASE ERROR DET
7KHz PWM D/A
CFG25 GEN.
CAPST SPEED ERROR DET
56KHz PWM D/A
CAPST SPEED ADJUST(M/ PAUSE/ HOLD(H) SLOW
PLL H.SYNC GEN
Q607 2SC1740S
QR608 DTC144ES
REC 6
REC M286
GND(S) M309
GND(M) M310
QR601 DTC144ES
※R641
820K PINK
560K GREEN
CAPST BRAKE M291
CAPST MODE M289
PG605-4 L215
SLOW/PAUSE
V REF M290
C.FG M287
C. FG
SEARCH M288
PG605-5 L216
CAPST SERVO
IC604 BX7506 CAPSTAN CONTROL
ANALOG
DIGITAL
CAPST TORQUE
PG605-1 L212
CFG
PG605-6 L217
MOTOR 12V L301
PG605-10 L221
Q1651 2SD1276
UNREG 16V
PG1651-1 S228
PG1651-2 S229
PG605-8 L219
PG605-9 L220
IC1653 NJM2903S FAN MOTOR PROTECT
QR1653 RTIP441S
Q613 2SD1251
FAN MOTOR
PG1652-2
PG1652-1
IC602 M54874P SLOW CONTROL
CTL AMP
30dB 0dB
PB SEARCH (Mid)
ACCEL/ BRAKE SW
PAUSE SLOW/ X2(Mid)
MIX SW
SEARCH SW25Hz
HEAD SW GEN.
SLOW V. SYNC PHASE CORRECT
ARTIFICIAL V. SYNC GEN.
CH1/CH2 PHASE
CH3 PHASE
WIDTH
BRAKE PULSE GEN. (MM)
PHASE
RT605 SLOW TRACKING PRESET
QR1654 DTC144ES
CTL HEAD
PG604-1
PG604-2
PG604-3
CTL(+)
CTL(−)
TP603 (J659)
SLOW ACCEL
TRICK HEAD SW
ADD. V
SLOW BRAKE
FAN MOTOR RESET
CAPSTAN SPEED −6V
CYL. ON
V. LOCK
M306
H103
PG904-1
PG909-9
E96
M305
M304
M302
M303
J460
M480
WAVEFORMS NO.
CAPST. SERVO SIGNAL
CYL. SERVO SIGNAL
※ ONE VOLTAGE: PB OR REC MODE.
TWO VOLTAGES: PB AND (REC) MODE.

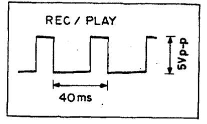
DIAGRAM L CYLINDER MOTOR & CAPSTAN MOTOR DRIVE


21
6 SENSOR
7
CYLINDER MOTOR
K311 GND(M)
K312 F5V
K301 MOTOR 12V
K292 1/2 Vcc
K294 CYL.SERVO
K293 CYL.FG
K297 TACH PULSE(+)
K296 TACH PULSE(-)
C642 10μ 5C
C641 10μ 5C
C643 10μ 5C
R661 10 5C
R660 10 5C
R662 10 5C
C636 100μ 5A
R659 0.47 5B
IC 603 HA13403 CYL. MOTOR DRIVER 5B
LOGIC
CV F.B
CONT STOP
QPP SW
CONT Vcc
HALL AMP
C632 4700P 4C
C634 4700P 4C
C635 4700P 5C
C633 4700P 5A
C631 47μ 5B
R655 1K8 5A
R656 47K 5B
R657 22 5C
C640 22μ 5C
R666 20K 5A
R665 100K 5A
R663 180 5A
R658 120 5C
PG901-1 … PG901-19
PG141-1 … PG141-19
PG143
CYL. FG(+)
CYL. FG(-)
HALL BIAS
TACH PULSE(+)
TACH PULSE(-)
TACH SENSOR
CYL. FG
※ONE VOLTAGE: PB OR REC MODE.
CYL. SERVO SIGNAL
7
K221 PG005-10 PG02-3 UNREG 16V
K217 PG005-6 PG02-1 CAPST TORQUE
Q11 2SD1266A
PG02-2
C05 33μ
C02 150n
C01 150n
C03 150n
CAPSTAN MOTOR
R02 1Ω8
R01 1Ω8
R03 1Ω8
C04 33μ
K216 PG005-5 CAPST SERVO
K215 PG005-4 V REF
F5V
R05 10K
R06 2K4
QR01 DTC144
K214 PG005-3 REVERSE
K219 PG005-8 GND(M)
C05 47μ
K220 PG005-9 GND(S)
R07 3K3
K218 PG005-7 F5V
RT01 2K2
DRIVER
ROTOR POSITION SENSOR
TA8408F CAPSTAN MOTOR DRIVE
R17 10
RT02 2K2
R15 10
HU
C10 10n
R16 10
HV
RT03
C07 100n
R08 10K
D01
C06 10n
R04 0.47
R09 12K
C08 3300n
SENSOR
K212 PG005-1 C.FG
Q02 2SC2812
Q03 2SC3361
R12 2K4
R10 2K4
R13 750
R11 100K
IC02 BA4560
CAPST. SERVO SIGNAL

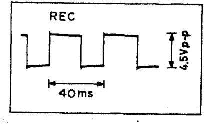
① IC601-8



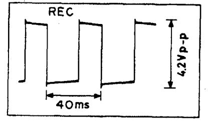
② IC601-10



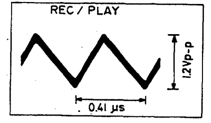
③ IC601-16



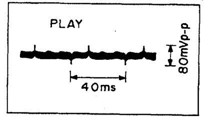
④ IC601-17



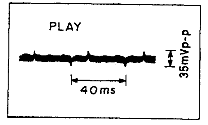
⑤ IC601-24



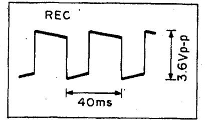
⑥ IC601-27



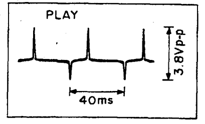
⑦ IC601-28



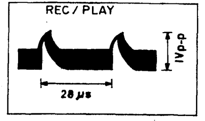
⑧ IC601-30



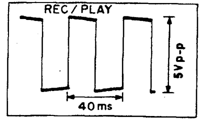
⑨ IC601-30



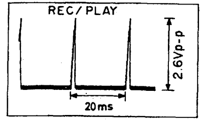
⑩ IC601-36



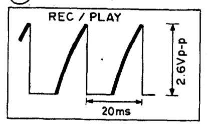
⑪ IC601-48



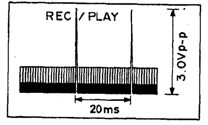
⑫ IC601-56



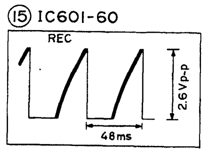
⑬ IC601-57



⑭ IC601-58



⑮ IC601-60



⑯ IC601-61

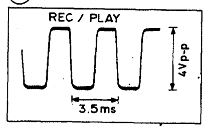


DIAGRAM M SYSTEM CONTROL

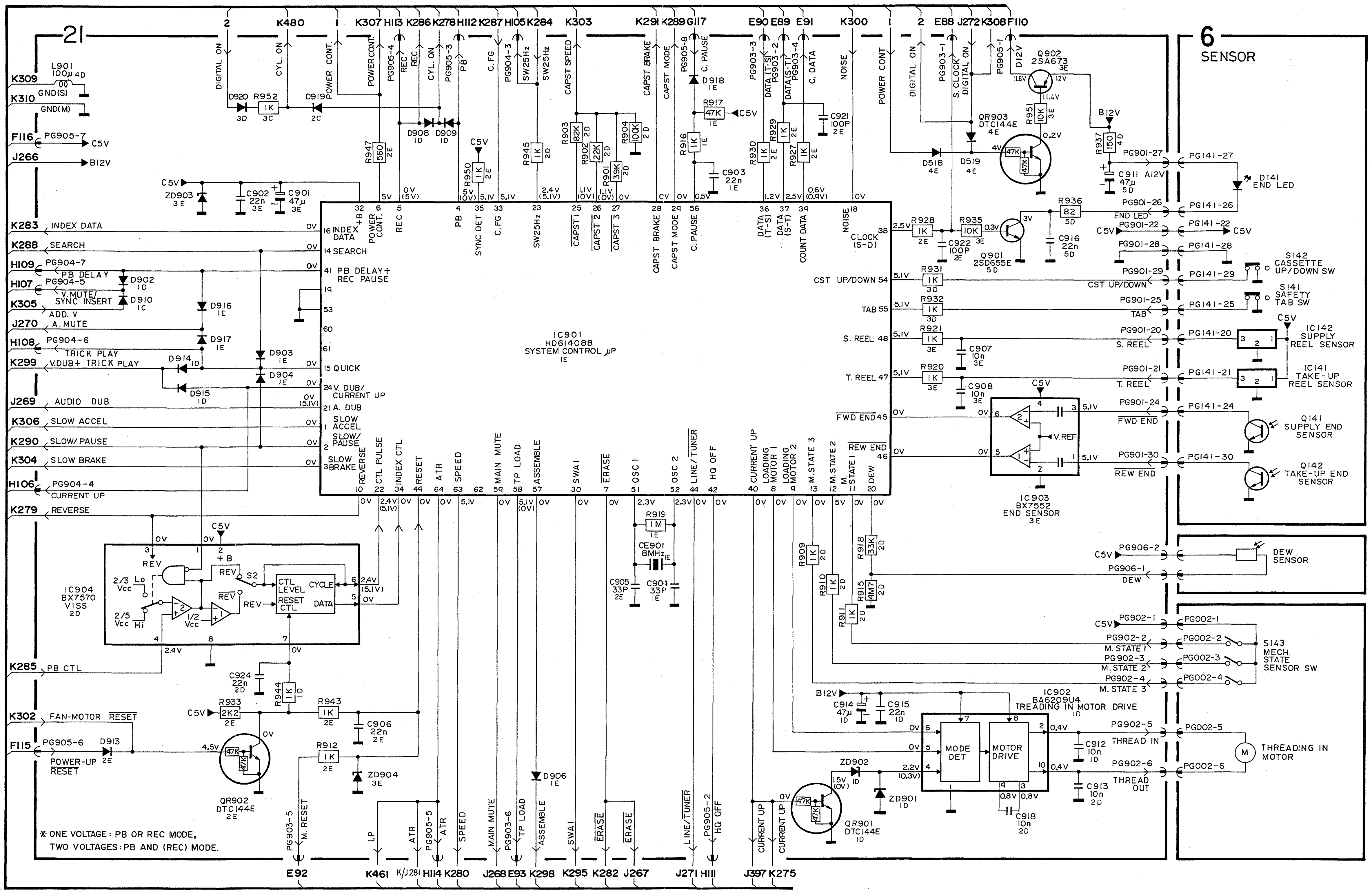
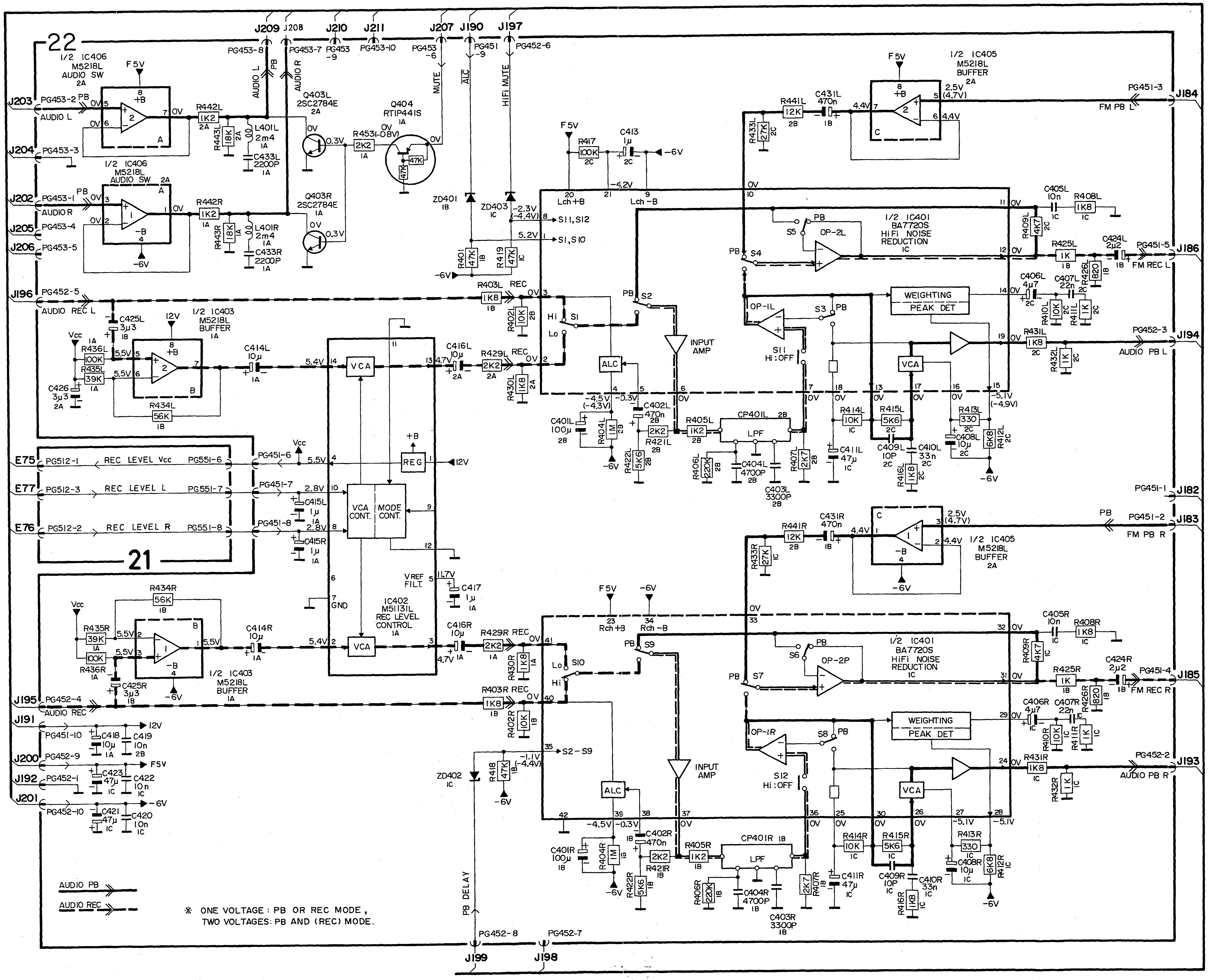

21
6
SENSOR
IC901
HD614088
SYSTEM CONTROL µP
1E
IC903
BX7552
END SENSOR
3E
IC904
BX7570
VISS
2D
IC902
BA6209U4
TREADING IN MOTOR DRIVE
1D
MODE DET
MOTOR DRIVE
CTL LEVEL
RESET CTL
CYCLE
DATA
REV
S2
+B
2/3 Vcc
2/5 Vcc
Lo
Hi
1/2 Vcc
V.REF
K309
K310
F116
J266
K283
K288
H109
H107
K305
J270
H108
K299
J269
K306
K290
K304
H106
K279
K285
K302
F115
L901
100µ 4D
GND(S)
GND(M)
PG905-7
C5V
B12V
INDEX DATA
SEARCH
PG904-7
PB DELAY
PG904-5
V.MUTE/
SYNC INSERT
ADD. V
A. MUTE
PG904-6
TRICK PLAY
V.DUB+ TRICK PLAY
AUDIO DUB
SLOW ACCEL
SLOW/PAUSE
SLOW BRAKE
PG904-4
CURRENT UP
REVERSE
PB CTL
FAN-MOTOR RESET
PG905-6
POWER-UP RESET
K480
K307
H113
K286
K278
H112
K287
H105
K284
K303
K291
K289
G117
E90
E89
E91
K300
E88
J272
K308
F110
DIGITAL ON
CYL. ON
POWER CONT.
REC
PB
C. FG
SW25Hz
CAPST SPEED
CAPST BRAKE
CAPST MODE
C. PAUSE
DATA (T-S)
DATA (S-T)
C. DATA
NOISE
S. CLOCK
DIGITAL ON
PG905-1
PG905-4
PG905-3
PG905-8
PG903-3
PG903-2
PG903-4
PG903-1
PG904-3
D12V
Q902
2SA673
3E
QR903
DTC144E
4E
Q901
2SD655E
5D
D518
4E
D519
4E
R936
82
5D
C916
22n
5D
R937
150
4D
C911
47µ
5D
A12V
R951
10K
3E
PG901-27
PG901-26
PG901-22
PG901-28
PG901-29
PG901-25
PG901-20
PG901-21
PG901-24
PG901-30
PG141-27
PG141-26
PG141-22
PG141-28
PG141-29
PG141-25
PG141-20
PG141-21
PG141-24
PG141-30
D141
END LED
S142
CASSETTE UP/DOWN SW
S141
SAFETY TAB SW
IC142
SUPPLY REEL SENSOR
IC141
TAKE-UP REEL SENSOR
Q141
SUPPLY END SENSOR
Q142
TAKE-UP END SENSOR
CST UP/DOWN
TAB
S. REEL
T. REEL
FWD END
REW END
CLOCK (S-D)
R928 1K 2E
R935 10K 3E
C922 100P 2E
R931 1K 3D
R932 1K 3D
R921 1K 3E
R920 1K 3E
C907 10n 3E
C908 10n 3E
DEW SENSOR
PG906-2
PG906-1
DEW
PG902-1
PG902-2
PG902-3
PG902-4
PG002-1
PG002-2
PG002-3
PG002-4
M. STATE 1
M. STATE 2
M. STATE 3
S143
MECH. STATE SENSOR SW
PG902-5
PG902-6
PG002-5
PG002-6
THREAD IN
THREAD OUT
THREADING IN MOTOR
M
C912 10n 1D
C913 10n 2D
C914 47µ 1D
C915 22n 1D
C918 10n 2D
ZD902 1D
ZD901 1D
QR901
DTC144E
1D
R909 1K 2D
R910 1K 2D
R911 1K 2D
R918 33K 2D
R915 4M7 2D
D920 3D
R952 1K 3C
D919 2C
D908 1D
D909 1D
R947 560 2E
R950 1K 2E
R945 1K 2D
R903 82K 2D
R902 22K 2D
R901 39K 2D
R904 100K 2D
D918 1E
R917 47K 1E
R916 1K 1E
C903 22n 1E
C921 100P 2E
R930 1K 2E
R929 1K 2E
R927 1K 2E
ZD903 3E
C902 22n 3E
C901 47µ 3E
D902 1D
D910 1C
D916 1E
D917 1E
D914 1D
D915 1D
D903 1E
D904 1E
R919 1M 1E
CE901 8MHz 1E
C905 33P 2E
C904 33P 1E
C924 22n 2D
R944 1K 1D
R933 2K2 2E
R943 1K 2E
C906 22n 2E
R912 1K 2E
ZD904 3E
D913 2E
D906 1E
QR902
DTC144E
2E
INDEX DATA
POWER CONT.
SYNC DET
C.FG
SW25Hz
CAPST 1
CAPST 2
CAPST 3
CAPST BRAKE
CAPST MODE
C. PAUSE
DATA (T-S)
DATA (S-T)
COUNT DATA
NOISE
SEARCH
PB DELAY + REC PAUSE
QUICK
V. DUB/ CURRENT UP
A. DUB
SLOW ACCEL
SLOW/ PAUSE
SLOW BRAKE
REVERSE
CTL PULSE
INDEX CTL
RESET
ATR
SPEED
MAIN MUTE
TP LOAD
ASSEMBLE
SWA1
ERASE
OSC 1
OSC 2
LINE/TUNER
HQ OFF
CURRENT UP
LOADING MOTOR 1
LOADING MOTOR 2
M. STATE 3
M. STATE 2
M. STATE 1
DEW
PG903-5
M. RESET
LP
ATR
PG905-5
SPEED
MAIN MUTE
PG903-6
TP LOAD
ASSEMBLE
SWA1
ERASE
LINE/TUNER
PG905-2
HQ OFF
CURRENT UP
E92
K461
K/J281
H114
K280
J268
E93
K298
K295
K282
J267
J271
H111
J397
K275
※ ONE VOLTAGE : PB OR REC MODE,
TWO VOLTAGES : PB AND (REC) MODE.

DIAGRAM N AUDIO NR


22
21
J203
J204
J202
J205
J206
J196
J195
J191
J200
J192
J201
E75
E77
E76
J209
J208
J210
J211
J207
J190
J197
J184
J186
J194
J182
J183
J185
J193
J199
J198
1/2 IC406
M5218L
AUDIO SW
1/2 IC405
M5218L
BUFFER
1/2 IC403
M5218L
BUFFER
1/2 IC401
BA7720S
HiFi NOISE
REDUCTION
IC402
M51131L
REC LEVEL
CONTROL
Q403L
2SC2784E
Q403R
2SC2784E
Q404
RT1P441S
ZD401
ZD402
ZD403
F5V
-6V
12V
Vcc
AUDIO L
AUDIO R
PB
MUTE
ALC
HIFI MUTE
AUDIO REC L
AUDIO REC
REC LEVEL Vcc
REC LEVEL L
REC LEVEL R
VCA
VCA CONT.
MODE CONT.
REG
VREF FILT
GND
ALC
INPUT AMP
LPF
CP401L
CP401R
WEIGHTING
PEAK DET
OP-1L
OP-2L
OP-1R
OP-2P
S1
S2
S3
S4
S5
S6
S7
S8
S9
S10
S11
Hi : OFF
S12
Hi : OFF
Hi
Lo
Lch+B
Lch-B
Rch+B
Rch-B
S11, S12
S1, S10
S2-S9
FM PB L
FM REC L
AUDIO PB L
FM PB R
FM REC R
AUDIO PB R
PB DELAY
PG453-8
PG453-7
PG453-9
PG453-10
PG453-6
PG451-9
PG452-6
PG453-2
PG453-3
PG453-1
PG453-4
PG453-5
PG452-5
PG452-4
PG451-10
PG452-9
PG452-1
PG452-10
PG512-1
PG512-3
PG512-2
PG551-6
PG551-7
PG551-8
PG451-6
PG451-7
PG451-8
PG451-3
PG451-5
PG452-3
PG451-1
PG451-2
PG451-4
PG452-2
PG452-8
PG452-7
R442L 1K2
R443L 18K
L401L 2m4
C433L 2200P
R442R 1K2
R443R 18K
L401R 2m4
C433R 2200P
R453 2K2
R401 47K
R419 47K
R417 100K
C413 1µ
R441L 12K
C431L 470n
R433L 27K
C405L 10n
R408L 1K8
R409L 4K7
R425L 1K
C424L 2µ2
R426L 820
C406L 4µ7
C407L 22n
R410L 10K
R411L 1K
R431L 1K8
R432L 1K
R403L 1K8
R402L 10K
C425L 3µ3
R436L 100K
R435L 39K
C426 3µ3
R434L 56K
C414L 10µ
C416L 10µ
R429L 2K2
R430L 1K8
C401L 100µ
R404L 1M
C402L 470n
R421L 2K2
R405L 1K2
R422L 5K6
R406L 220K
C404L 4700P
C403L 3300P
R407L 2K7
R414L 10K
C411L 47µ
R415L 5K6
C409L 10P
C410L 33n
R416L 1K8
R413L 330
C408L 10µ
R412L 6K8
C415L 1µ
C415R 1µ
C417 1µ
R441R 12K
C431R 470n
R433R 27K
R434R 56K
R435R 39K
R436R 100K
C425R 3µ3
C414R 10µ
C416R 10µ
R429R 2K2
R430R 1K8
R403R 1K8
R402R 10K
R418 47K
C418 10µ
C419 10n
C423 47µ
C422 10n
C421 47µ
C420 10n
C405R 10n
R408R 1K8
R409R 4K7
R425R 1K
C424R 2µ2
R426R 820
C406R 4µ7
C407R 22n
R410R 10K
R411R 1K
R431R 1K8
R432R 1K
C401R 100µ
R404R 1M
C402R 470n
R421R 2K2
R405R 1K2
R422R 5K6
R406R 220K
C404R 4700P
C403R 3300P
R407R 2K7
R414R 10K
C411R 47µ
R415R 5K6
C409R 10P
C410R 33n
R416R 1K8
R413R 330
C408R 10µ
R412R 6K8
2.5V (4.7V)
4.4V
5.4V
5.5V
4.7V
2.8V
11.7V
0.3V
-4.5V (-4.3V)
-0.3V
-5.1V (-4.9V)
-2.3V (-4.4V)
-1.1V (-4.4V)
5.2V
-4.2V
OV
AUDIO PB
AUDIO REC

※ ONE VOLTAGE : PB OR REC MODE,
TWO VOLTAGES: PB AND (REC) MODE.

DIAGRAM O VIDEO I/O PROCESSING (1) (○ = For oscilloscope pictures see page 2-32)

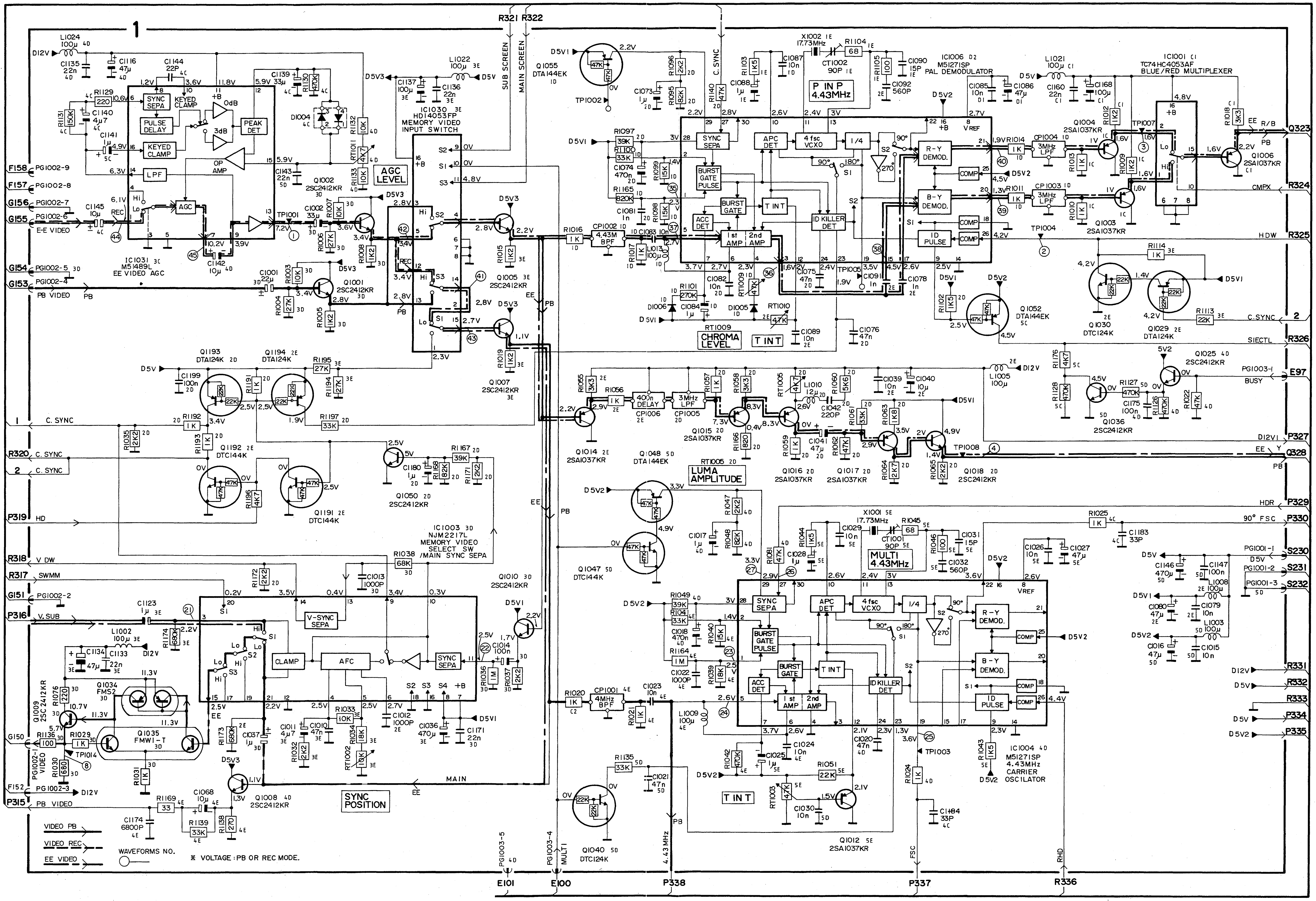
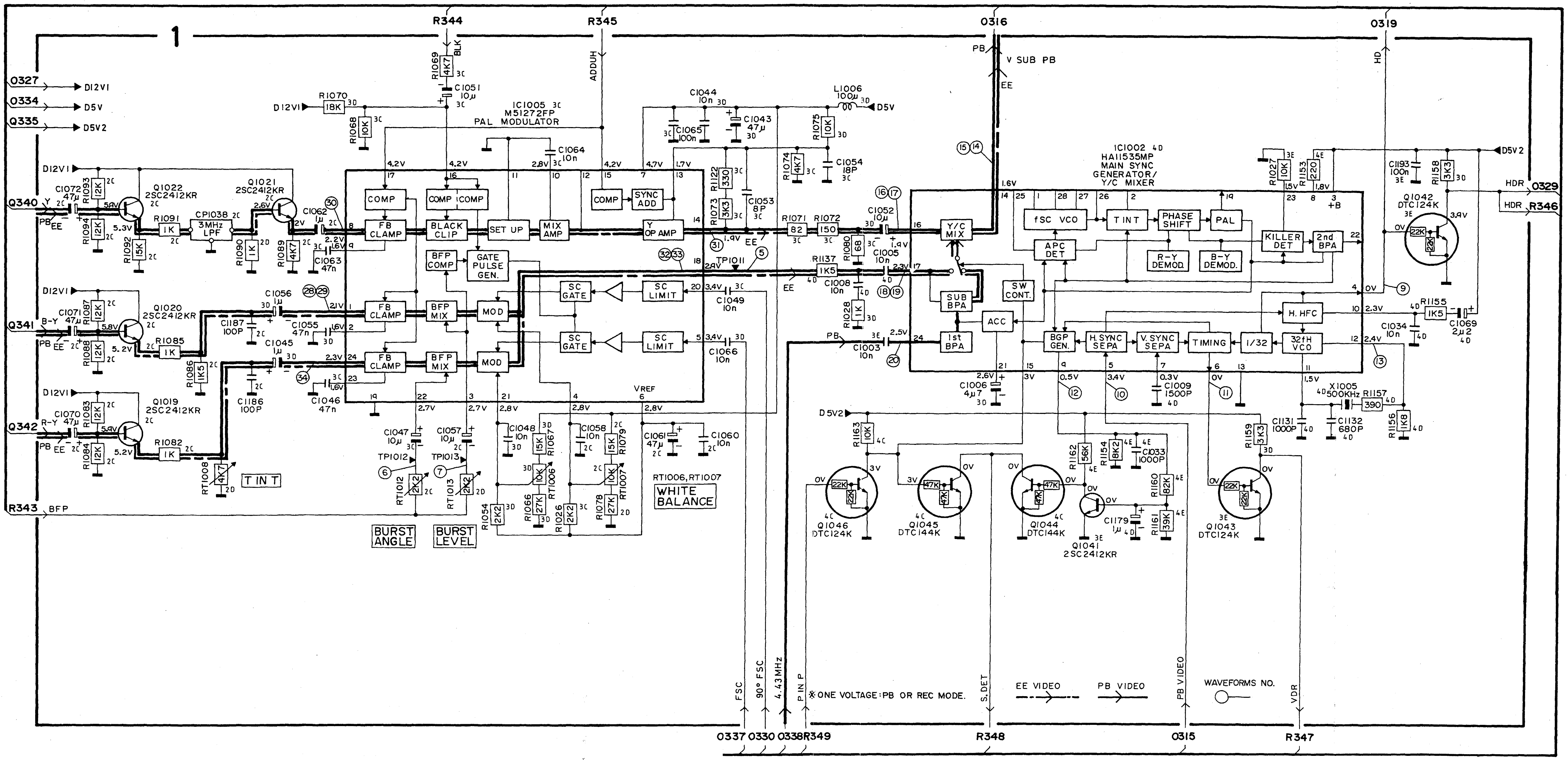
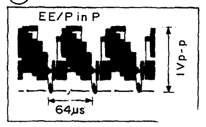
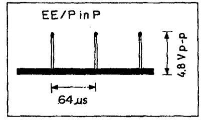
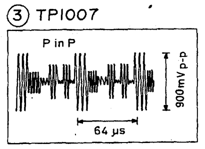

R321 R322
SUB SCREEN
MAIN SCREEN
C. SYNC
IC1031 M51489L EE VIDEO AGC
SYNC SEPA
KEYED CLAMP
PULSE DELAY
PEAK DET
AGC
LPF
OP AMP
AGC LEVEL
IC1030 HD14053FP MEMORY VIDEO INPUT SWITCH
IC1006 M51271SP PAL DEMODULATOR
IC1001 TC74HC4053AF BLUE/RED MULTIPLEXER
P IN P 4.43MHz
X1002 17.73MHz
APC DET
4 fsc VCXO
1/4
R-Y DEMOD.
B-Y DEMOD.
COMP
ID PULSE
BURST GATE PULSE
BURST GATE
ACC DET
T INT
ID KILLER DET
1st AMP
2nd AMP
CHROMA LEVEL
T INT
4.43M BPF
400n DELAY
3MHz LPF
LUMA AMPLITUDE
IC1003 NJM2217L MEMORY VIDEO SELECT SW /MAIN SYNC SEPA
V-SYNC SEPA
CLAMP
AFC
SYNC SEPA
SYNC POSITION
Q1034 FMS2
Q1035 FMW1-T
X1001 17.73MHz
MULTI 4.43MHz
4MHz BPF
IC1004 M51271SP 4.43MHz CARRIER OSCILATOR
TINT
F158 PG1002-9
F157 PG1002-8
G156 PG1002-7
G155 PG1002-6 E-E VIDEO
G154 PG1002-5
G153 PG1002-4 PB VIDEO
C. SYNC
R320 C. SYNC
C. SYNC
P319 HD
R318 V DW
R317 SWMM
G151 PG1002-2
P316 V. SUB
G150 PG1002-1 VIDEO
F152 PG1002-3
P315 PB VIDEO
Q323 EE R/B PB
R324 CMPX
R325 HDW
C.SYNC
R326 SIECTL
E97 PG1003-1 BUSY
P327 D12V1
Q328 EE Y PB
P329 HDR
P330 90° FSC
S230 PG1001-1
S231 PG1001-2
S232 PG1001-3
R331 D12V
R332 D5V
R333
P334 D5V
P335 D5V2
E101 PG1003-5
E100 PG1003-4 MULTI
P338 4.43 MHz
P337 FSC
R336 RHD
VIDEO PB
VIDEO REC
EE VIDEO
WAVEFORMS NO.
※ VOLTAGE : PB OR REC MODE.

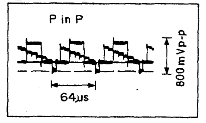
DIAGRAM P VIDEO I/O PROCESSING (2)

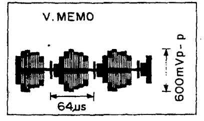

1
R344
R345
0316
0319
0327 DI2V1
0334 D5V
0335 D5V2
0340 Y
0341 B-Y
0342 R-Y
R343 BFP
Q1022 2SC2412KR
Q1021 2SC2412KR
Q1020 2SC2412KR
Q1019 2SC2412KR
CP1038 3MHz LPF
IC1005 M51272FP PAL MODULATOR
COMP
FB CLAMP
BLACK CLIP
SET UP
MIX AMP
SYNC ADD
Y OP AMP
BFP COMP
GATE PULSE GEN.
BFP MIX
MOD
SC GATE
SC LIMIT
VREF
TINT
BURST ANGLE
BURST LEVEL
RT1006, RT1007 WHITE BALANCE
TP1011
TP1012
TP1013
IC1002 HA11535MP MAIN SYNC GENERATOR/ Y/C MIXER
Y/C MIX
fsc VCO
TINT
PHASE SHIFT
PAL
APC DET
R-Y DEMOD.
B-Y DEMOD.
KILLER DET
2nd BPA
SW CONT.
SUB BPA
ACC
1st BPA
BGP GEN.
H.SYNC SEPA
V.SYNC SEPA
TIMING
1/32
32fH VCO
H.HFC
X1005 500KHz
Q1042 DTC124K
Q1046 DTC124K
Q1045 DTC144K
Q1044 DTC144K
Q1041 2SC2412KR
Q1043 DTC124K
L1006 100µ
D5V
D5V2
HDR 0329
HDR R346
V SUB PB
PB
EE
FSC
90° FSC
4.43MHz
P IN P
S.DET
PB VIDEO
VDR
※ONE VOLTAGE : PB OR REC MODE.
EE VIDEO
PB VIDEO
WAVEFORMS NO.
0337 0330 0338 R349
R348
0315
R347

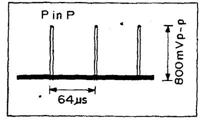
① TP1001


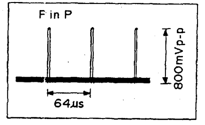
② TP1004


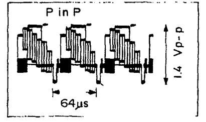
③ TP1007


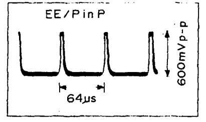
④ TP1008


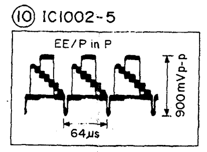
⑤ TP1011


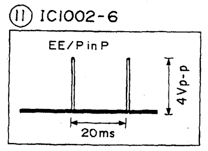
⑥ TP1012


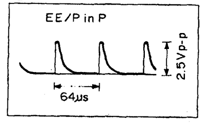
⑦ TP1013


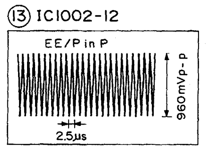
⑧ TP1014


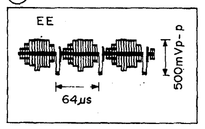
⑨ IC1002-4


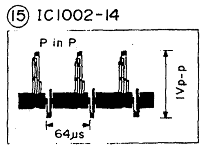
⑩ IC1002-5


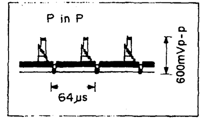
⑪ IC1002-6


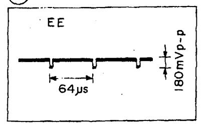
⑫ IC1002-9


⑬ IC1002-12


⑭ IC1002-14


⑮ IC1002-14


⑯ IC1002-16


⑰ IC1002-16


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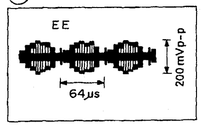
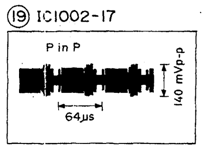
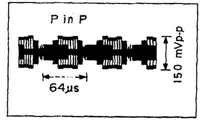
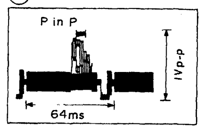
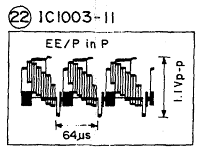
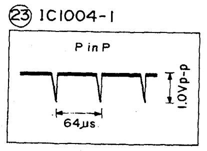


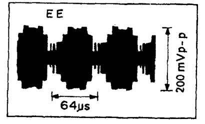
⑲ IC1002-17


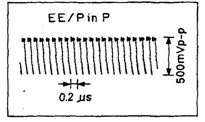
⑳ IC1002-24


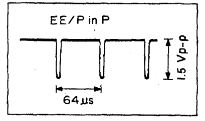
㉑ IC1003-3


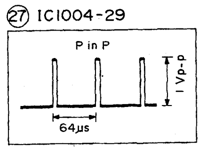
㉒ IC1003-11


㉓ IC1004-1


㉔ IC1004-5


㉕ IC1004-19


㉖ IC1004-27


㉗ IC1004-29


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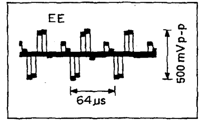

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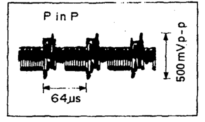
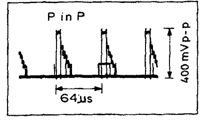
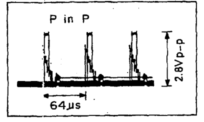
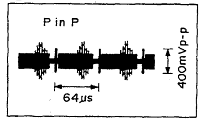
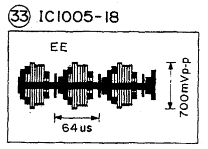
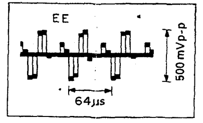


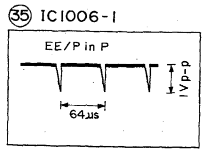
㉚ IC1005-8


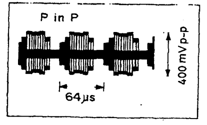
㉛ IC1005-14


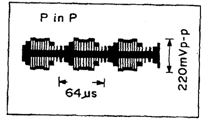
㉜ IC1005-18


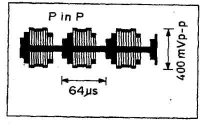
㉝ IC1005-18


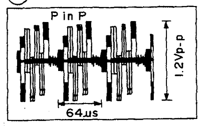
㉞ IC1005-24


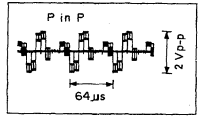
㉟ IC1006-1


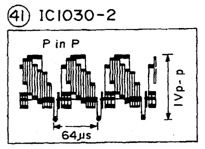
㊱ IC1006-3


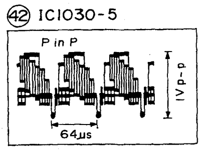
㊲ IC1006-5


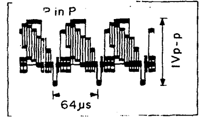
㊳ IC1006-15


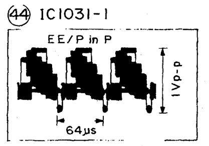
㊴ IC1006-20


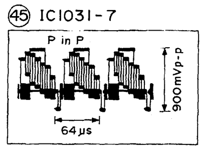
㊵ IC1006-21


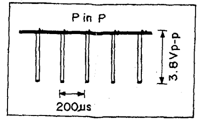
㊶ IC1030-2


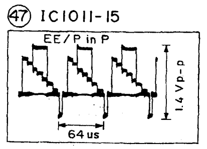
㊷ IC1030-5


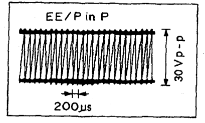
㊸ IC1030-15


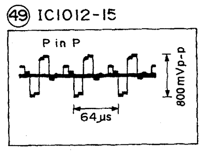
㊹ IC1031-1


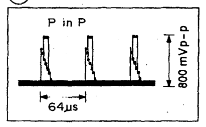
㊺ IC1031-7


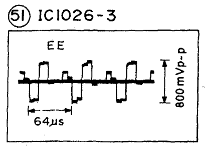
㊻ IC1011-8


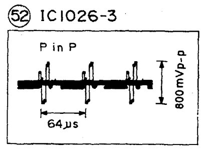
㊼ IC1011-15


㊽ IC1012-5


㊾ IC1012-15


㊿ IC1025-3


(51) IC1026-3


(52) IC1026-3


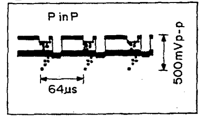
(54) IC1027-3


DIAGRAM Q ENCODER/DECODER/MEMORY (○ = For oscilloscope pictures see page 2-32)

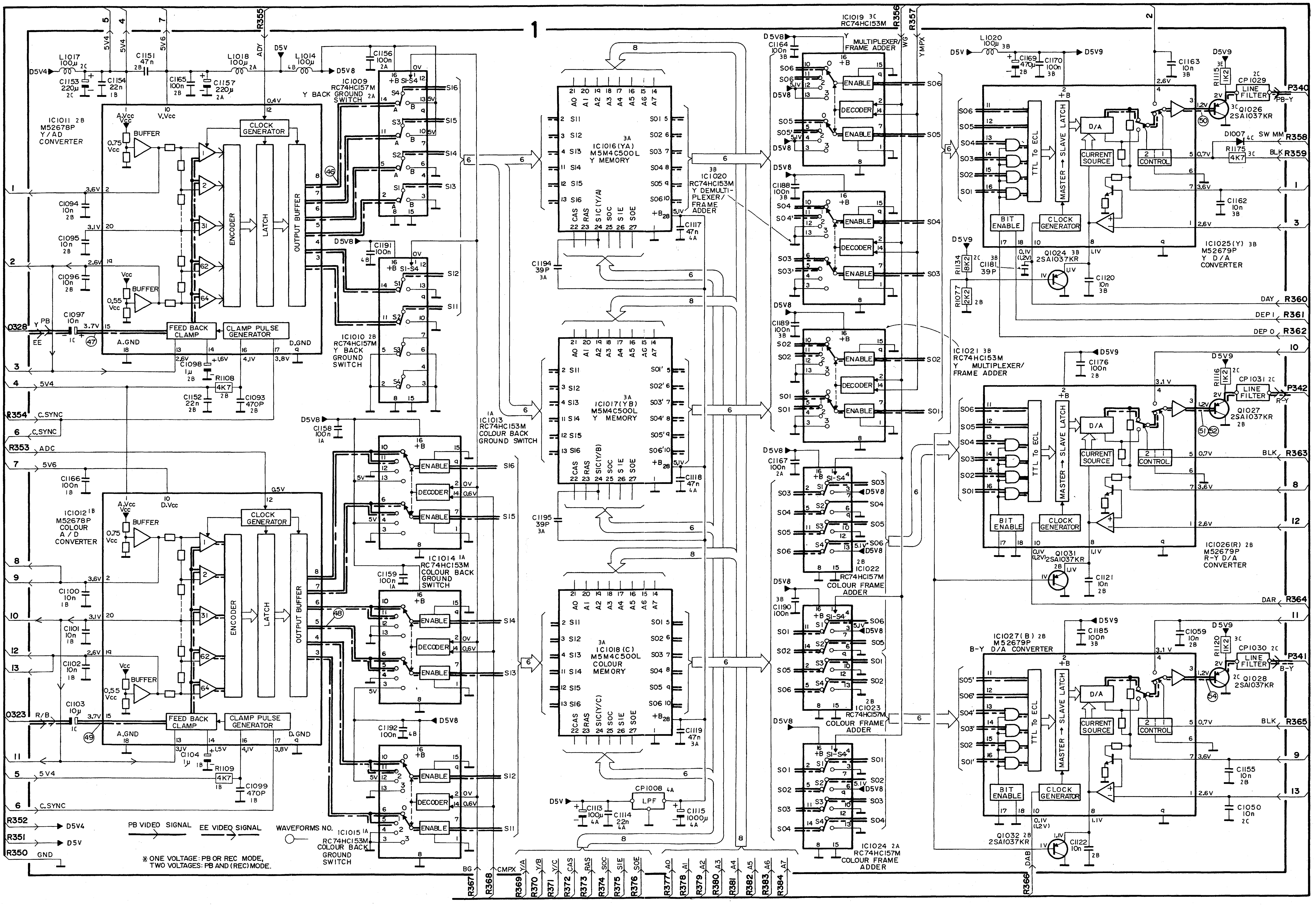
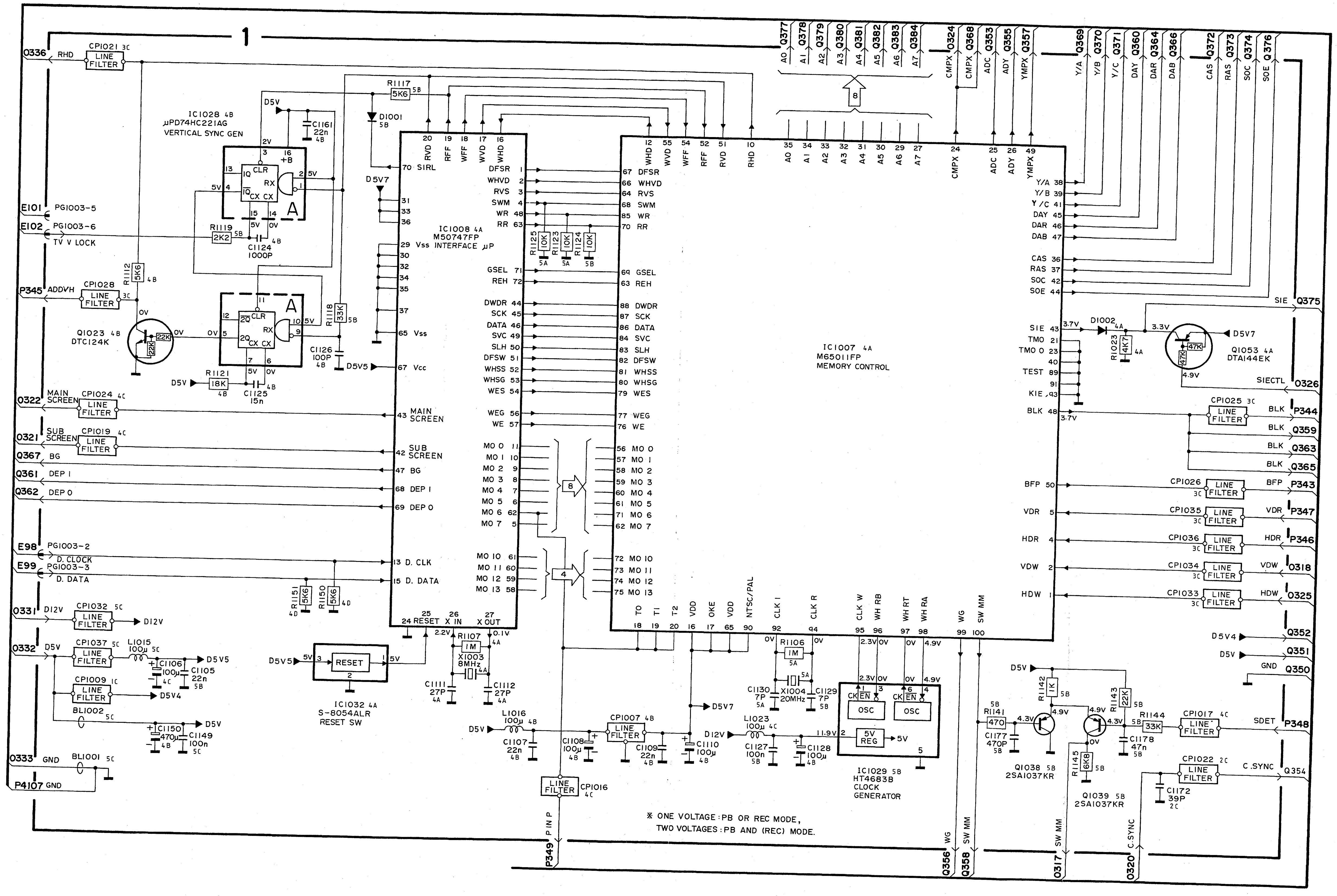
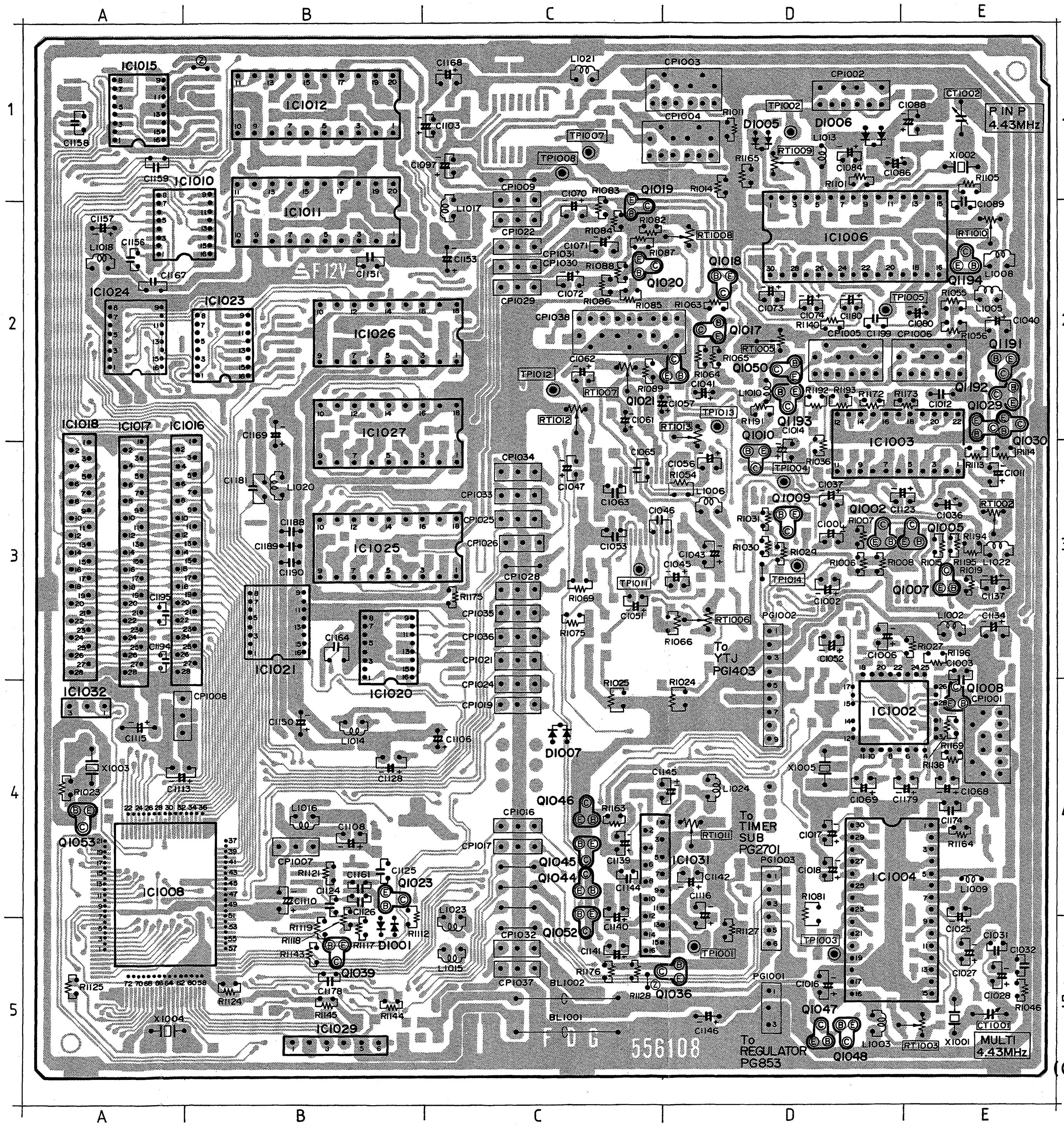

IC1011 2B M52678P Y/AD CONVERTER
IC1012 1B M52678P COLOUR A/D CONVERTER
CLOCK GENERATOR
BUFFER
ENCODER
LATCH
OUTPUT BUFFER
FEED BACK CLAMP
CLAMP PULSE GENERATOR
A.GND
D.GND
IC1009 RC74HC157M Y BACK GROUND SWITCH 2A
IC1010 2B RC74HC157M Y BACK GROUND SWITCH
IC1013 1A RC74HC153M COLOUR BACK GROUND SWITCH
IC1014 1A RC74HC153M COLOUR BACK GROUND SWITCH
IC1015 1A RC74HC153M COLOUR BACK GROUND SWITCH
IC1016 (YA) 3A M5M4C500L Y MEMORY
IC1017 (YB) 3A M5M4C500L Y MEMORY
IC1018 (C) 3A M5M4C500L COLOUR MEMORY
IC1019 3C RC74HC153M Y MULTIPLEXER/FRAME ADDER
IC1020 3B RC74HC153M Y DEMULTIPLEXER/FRAME ADDER
IC1021 3B RC74HC153M Y MULTIPLEXER/FRAME ADDER
IC1022 2B RC74HC157M COLOUR FRAME ADDER
IC1023 2B RC74HC157M COLOUR FRAME ADDER
IC1024 2A RC74HC157M COLOUR FRAME ADDER
IC1025 (Y) 3B M52679P Y D/A CONVERTER
IC1026 (R) 2B M52679P R-Y D/A CONVERTER
IC1027 (B) 2B M52679P B-Y D/A CONVERTER
ENABLE
DECODER
TTL To ECL
MASTER → SLAVE LATCH
D/A
CURRENT SOURCE
CONTROL
BIT ENABLE
CLOCK GENERATOR
LINE FILTER
CP1008 4A LPF
Q1024 3B 2SA1037KR
Q1026 3C 2SA1037KR
Q1027 2B 2SA1037KR
Q1028 2C 2SA1037KR
Q1031 2B 2SA1037KR
Q1032 2B 2SA1037KR
P340 PB-Y
P342 R-Y
P341 B-Y
R355 ADY
R356 WG
R357 YMPX
R358 SW MM
R359 BLK
R360 DAY
R361 DEP1
R362 DEP0
R363 BLK
R364 DAR
R365 BLK
R366 DAB
R354 C.SYNC
R353 ADC
R352 D5V4
R351 D5V
R350 GND
Q328 Y PB EE
Q323 R/B
R367 BG
R368 CMPX
R369 Y/A
R370 Y/B
R371 Y/C
R372 CAS
R373 RAS
R374 SOC
R375 SIE
R376 SOE
R377 A0
R378 A1
R379 A2
R380 A3
R381 A4
R382 A5
R383 A6
R384 A7
PB VIDEO SIGNAL
EE VIDEO SIGNAL
WAVEFORMS NO.
※ ONE VOLTAGE: PB OR REC MODE, TWO VOLTAGES: PB AND (REC) MODE.

DIAGRAM R DIGITAL SIGNAL PROCESSING CONTROL


1
IC1028 4B
μPD74HC221AG
VERTICAL SYNC GEN
IC1008 4A
M50747FP
INTERFACE μP
IC1007 4A
M65011FP
MEMORY CONTROL
IC1032 4A
S-8054ALR
RESET SW
IC1029 5B
HT4683B
CLOCK GENERATOR
Q1023 4B
DTC124K
Q1053 4A
DTA144EK
Q1038 5B
2SA1037KR
Q1039 5B
2SA1037KR
X1003
8MHz
X1004
20MHz
RESET
OSC
5V REG
LINE FILTER
Q336 RHD
E101 PG1003-5
E102 PG1003-6
TV V LOCK
P345 ADDVH
Q322 MAIN SCREEN
Q321 SUB SCREEN
Q367 BG
Q361 DEP 1
Q362 DEP 0
E98 PG1003-2 D. CLOCK
E99 PG1003-3 D. DATA
Q331 D12V
Q332 D5V
Q333 GND
P4107 GND
P349 P IN P
Q356 WG
Q358 SW MM
Q317 SW MM
Q320 C.SYNC
Q377 A0
Q378 A1
Q379 A2
Q380 A3
Q381 A4
Q382 A5
Q383 A6
Q384 A7
Q324 CMPX
Q368 CMPX
Q353 ADC
Q355 ADY
Q357 YMPX
Q369 Y/A
Q370 Y/B
Q371 Y/C
Q360 DAY
Q364 DAR
Q366 DAB
Q372 CAS
Q373 RAS
Q374 SOC
Q376 SOE
Q375 SIE
Q326 SIECTL
P344 BLK
Q359 BLK
Q363 BLK
Q365 BLK
P343 BFP
P347 VDR
P346 HDR
Q318 VDW
Q325 HDW
Q352 D5V4
Q351 D5V
Q350 GND
P348 SDET
Q354 C.SYNC
70 SIRL
DFSR
WHVD
RVS
SWM
WR
RR
GSEL
REH
DWDR
SCK
DATA
SVC
SLH
DFSW
WHSS
WHSG
WES
WEG
WE
MO 0
MO 1
MO 2
MO 3
MO 4
MO 5
MO 6
MO 7
MO 10
MO 11
MO 12
MO 13
43 MAIN SCREEN
42 SUB SCREEN
47 BG
68 DEP 1
69 DEP 0
13 D. CLK
15 D. DATA
24 RESET
X IN
X OUT
65 Vss
67 Vcc
29 Vss
TO
T1
T2
VDD
OKE
NTSC/PAL
CLK 1
CLK R
CLK W
WH RB
WH RT
WH RA
WG
SW MM
SIE
TMO
TMO 0
TEST
KIE
BLK
BFP
VDR
HDR
VDW
HDW
R1117 5K6
R1112 5K6
R1118 33K
R1119 2K2
R1121 18K
R1125 10K
R1123 10K
R1124 10K
R1151 5K6
R1150 5K6
R1107 1M
R1106 1M
R1023 4K7
R1141 470
R1142 1K
R1143 22K
R1144 33K
R1145 6K8
D1001
D1002
C1161 22n
C1124 1000P
C1126 100P
C1125 15n
C1111 27P
C1112 27P
C1106 100μ
C1105 22n
C1150 470μ
C1149 100n
C1107 22n
C1108 100μ
C1109 22n
C1110 100μ
C1127 100n
C1128 100μ
C1130 7P
C1129 7P
C1177 470P
C1178 47n
C1172 39P
L1015 100μ
L1016 100μ
L1023 100μ
BL1001
BL1002
CP1021
CP1028
CP1024
CP1019
CP1032
CP1037
CP1009
CP1007
CP1016
CP1025
CP1026
CP1035
CP1036
CP1034
CP1033
CP1017
CP1022
D5V
D5V5
D5V4
D5V7
D12V
8
4

※ ONE VOLTAGE : PB OR REC MODE,
TWO VOLTAGES : PB AND (REC) MODE.

PCB 1, Digital Signal Processing


A
B
C
D
E
1
2
3
4
5
IC1015
IC1012
IC1010
IC1011
IC1024
IC1023
IC1026
IC1027
IC1018
IC1017
IC1016
IC1025
IC1021
IC1020
IC1032
IC1008
IC1029
IC1006
IC1003
IC1002
IC1031
IC1004
CP1003
CP1002
CP1004
CT1002
P IN P
4.43MHz
TP1007
TP1006
TP1002
TP1009
TP1010
TP1005
TP1012
TP1013
TP1004
TP1011
TP1014
TP1003
TP1001
RT1008
RT1005
RT1007
RT1012
RT1013
RT1006
RT1011
RT1002
RT1003
RT1010
F 12V
D1005
D1006
D1007
D1001
Q1019
Q1018
Q1020
Q1017
Q1050
Q1021
Q1193
Q1010
Q1009
Q1002
Q1005
Q1007
Q1194
Q1191
Q1192
Q1029
Q1030
Q1008
Q1046
Q1045
Q1044
Q1052
Q1036
Q1047
Q1048
Q1023
Q1039
Q1053
X1002
X1003
X1004
X1005
X1001
To YTJ PG1403
To TIMER SUB PG2701
To REGULATOR PG853
PG1002
PG1003
PG1001
CT1001
MULTI
4.43MHz
556108
BL1002
BL1001

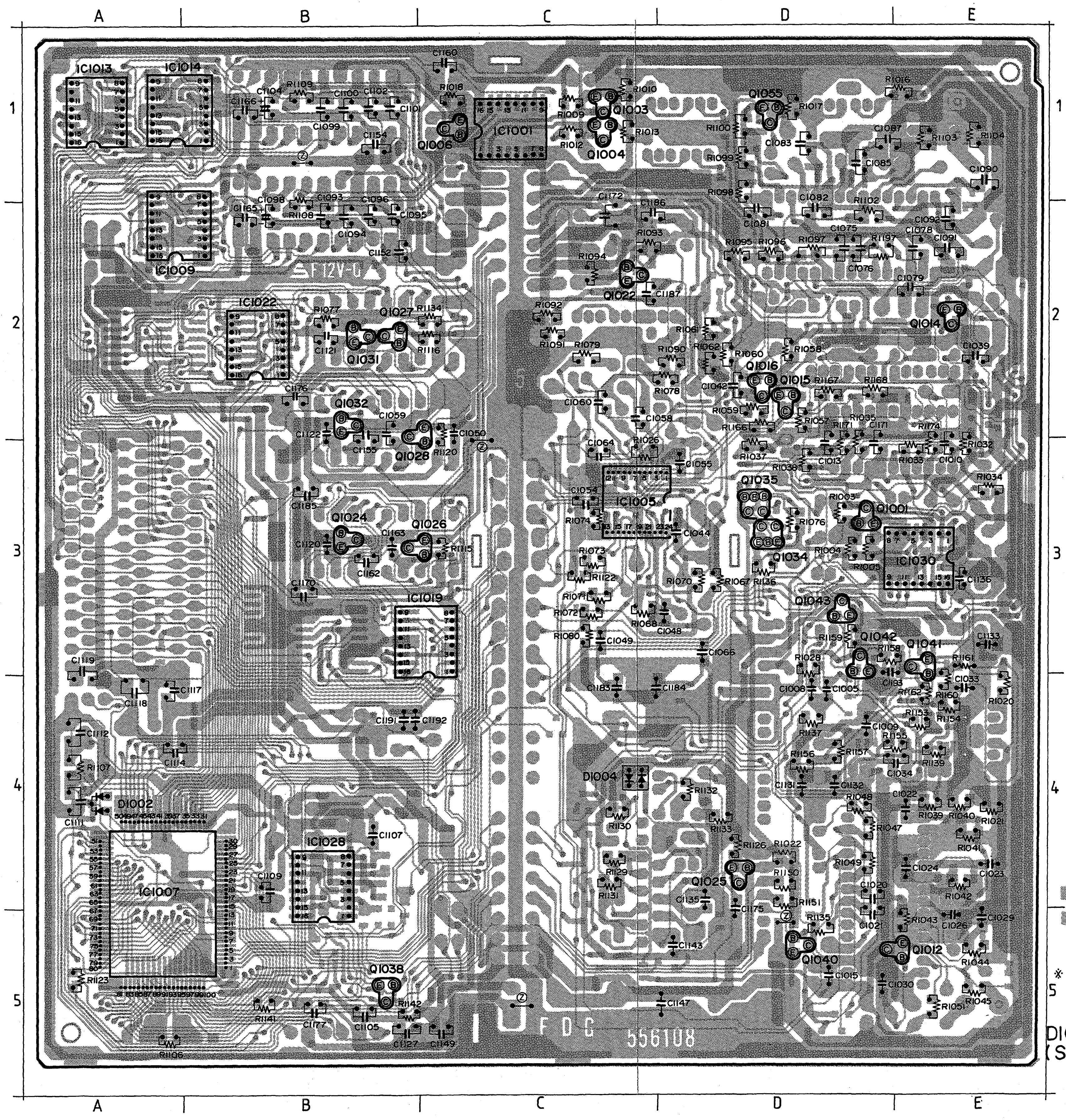
RT1002 SYNC POSITION
RT1003 T IN T
RT1005 LUMA AMPLITUDE
RT1006 WHITE BALANCE
RI007 WHITE BALANCE
RT1008 RED LEVEL
RT1009 CHROMA LEVEL
RT1010 T IN T
RT1011 AGC LEVEL
MAIN SCREEN BRIGHTNESS
RT1012 BURST ANGLE
SUB SCREEN BRIGHTNESS
RT1013 BURST LEVEL

▨ : SOLDER SIDE

※ NOTE : MARK "Ⓩ" IS LEADLESS(CHIP) JUMPER.

(COMPONENTS SIDE)

PCB 1, Digital Signal Processing


A
B
C
D
E
1
2
3
4
5
IC1013
IC1014
IC1009
IC1022
IC1001
IC1005
IC1030
IC1019
IC1028
IC1007
D1002
D1004
Q1003
Q1004
Q1006
Q1055
Q1027
Q1031
Q1022
Q1014
Q1016
Q1015
Q1032
Q1028
Q1035
Q1001
Q1024
Q1026
Q1034
Q1043
Q1042
Q1041
Q1025
Q1040
Q1012
Q1038
F12V-G
FDC
556108
R1123
R1106
R1141
R1142
C1107
C1109
C1119
C1118
C1117
C1112
C1114
R1107
C1111
C1191
C1192
C1183
C1184
C1143
C1147
C1135
C1175
R1132
R1133
R1130
R1129
R1131
R1126
R1022
R1150
R1151
R1135
C1015
C1030
R1051
R1045
R1044
C1026
C1029
R1043
C1021
C1020
R1042
C1024
C1023
R1049
R1047
R1048
R1041
R1039
R1040
R1021
C1022
C1034
R1139
C1131
C1132
R1156
R1157
R1137
C1009
R1155
R1153
R1154
C1006
C1005
R1028
R1159
R1158
C1183
R1161
C1033
R1160
R1162
R1020
C1133
C1136
R1004
R1005
R1003
R1076
R1067
R1136
R1070
C1066
C1048
R1068
C1049
R1080
R1072
R1071
R1073
R1122
R1074
C1044
C1054
C1064
R1025
C1055
C1058
C1060
R1078
R1090
R1062
R1061
R1060
R1059
R1058
C1042
R1165
R1057
R1037
R1038
C1013
R1171
R1035
C1171
R1033
R1174
C1010
R1032
R1034
R1167
R1168
C1039
C1079
C1078
C1076
C1075
C1091
C1092
R1097
R1095
R1096
C1081
C1082
R1102
R1098
R1099
R1100
C1083
R1017
R1016
C1087
C1085
R1103
R1104
C1090
R1010
R1009
R1012
R1013
R1018
C1160
C1172
C1186
R1093
R1094
C1187
R1092
R1091
R1079
R1077
C1121
R1134
R1116
C1176
C1122
C1059
C1153
C1050
R1120
C1185
C1120
C1163
C1152
R1115
C1170
C1104
R1109
C1100
C1102
C1101
C1166
C1099
C1154
C1098
C1093
C1096
C1165
R1108
C1094
C1095
C1152
C1177
C1105
C1127
C1149

▨ : SOLDER SIDE

▨ : PARTS SIDE

※ NOTE MARK "Ⓩ" IS LEADLESS(CHIP) JUMPER.

DIGITAL P.C.B
(SOLDER SIDE)

DIAGRAM S POWER SUPPLY

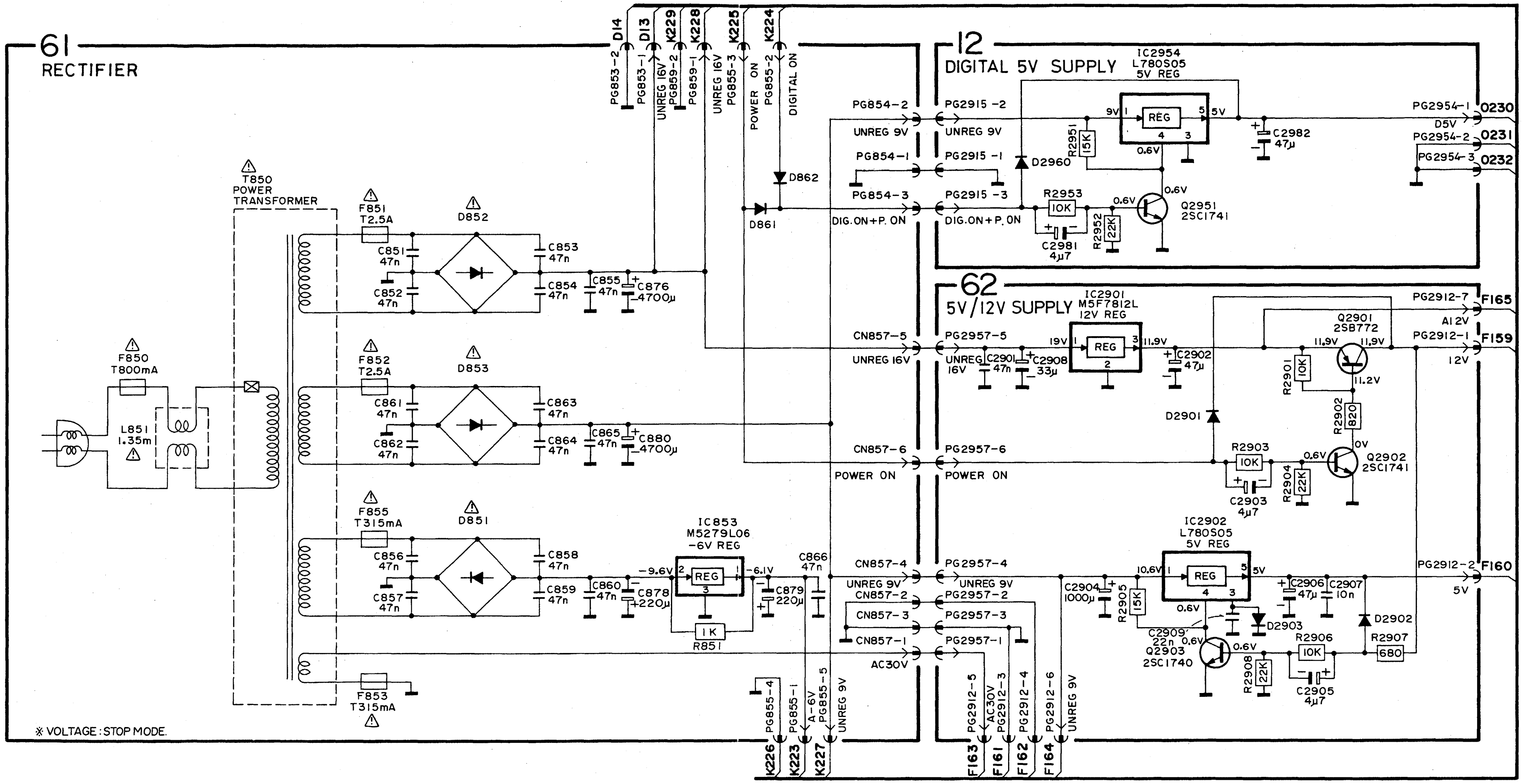
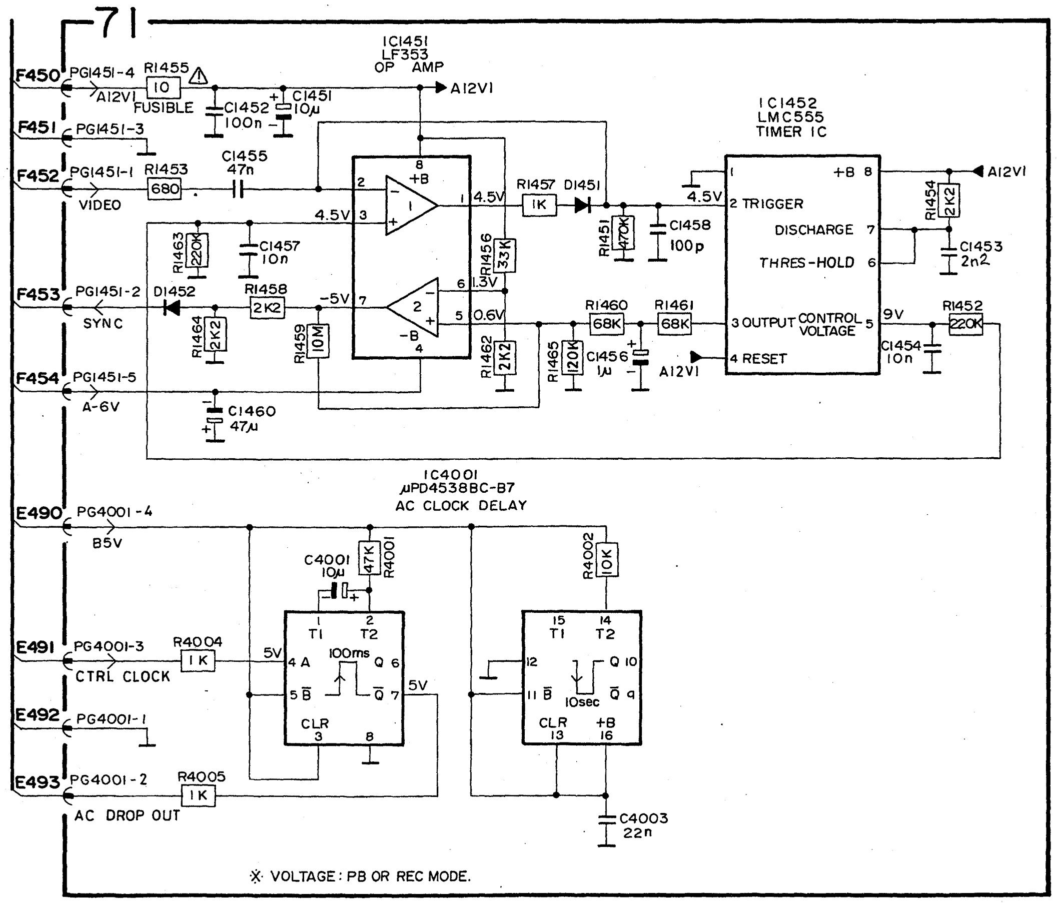
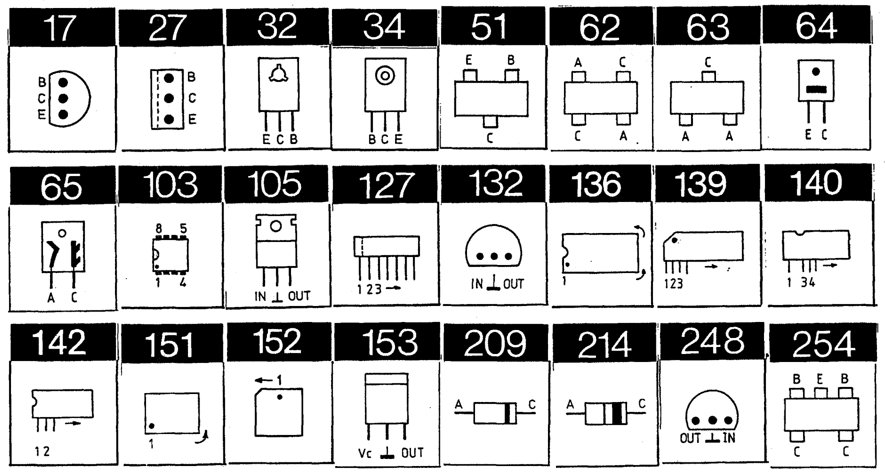

61
RECTIFIER
T850
POWER
TRANSFORMER
F850
T800mA
L851
1.35m
F851
T2.5A
D852
C851 47n
C852 47n
C853 47n
C854 47n
C855 47n
C876 4700µ
F852
T2.5A
D853
C861 47n
C862 47n
C863 47n
C864 47n
C865 47n
C880 4700µ
F855
T315mA
D851
C856 47n
C857 47n
C858 47n
C859 47n
C860 47n
C878 220µ
IC853
M5279L06
-6V REG
REG
-9.6V
-6.1V
C879 220µ
C866 47n
1K
R851
F853
T315mA
D861
D862
※ VOLTAGE : STOP MODE.
D14
D13
K229
K228
K225
K224
PG853-2
PG853-1
UNREG 16V
PG859-2
PG859-1
UNREG 16V
PG855-3
POWER ON
PG855-2
DIGITAL ON
PG854-2
UNREG 9V
PG854-1
PG854-3
DIG.ON+P.ON
CN857-5
UNREG 16V
CN857-6
POWER ON
CN857-4
UNREG 9V
CN857-2
CN857-3
CN857-1
AC30V
PG855-4
PG855-1
A-6V
PG855-5
UNREG 9V
K226
K223
K227
12
DIGITAL 5V SUPPLY
IC2954
L780S05
5V REG
PG2915-2
UNREG 9V
PG2915-1
PG2915-3
DIG.ON+P.ON
9V
REG
5V
0.6V
R2951 15K
D2960
R2953 10K
0.6V
R2952 22K
C2981 4µ7
Q2951
2SC1741
C2982 47µ
PG2954-1
D5V
PG2954-2
PG2954-3
0230
0231
0232
62
5V/12V SUPPLY
IC2901
M5F7812L
12V REG
PG2957-5
UNREG 16V
19V
REG
11.9V
C2901 47n
C2908 33µ
C2902 47µ
Q2901
2SB772
11.9V
11.2V
R2901 10K
R2902 820
D2901
PG2957-6
POWER ON
R2903 10K
0.6V
0V
R2904 22K
C2903 4µ7
Q2902
2SC1741
PG2912-7
A12V
PG2912-1
12V
F165
F159
IC2902
L780S05
5V REG
PG2957-4
UNREG 9V
PG2957-2
PG2957-3
PG2957-1
C2904 1000µ
10.6V
REG
5V
R2905 15K
0.6V
C2906 47µ
C2907 10n
D2903
D2902
C2909 22n
0.6V
Q2903
2SC1740
R2906 10K
R2907 680
R2908 22K
C2905 4µ7
PG2912-2
5V
F160
PG2912-5
AC30V
PG2912-3
PG2912-4
PG2912-6
UNREG 9V
F163
F161
F162
F164

DIAGRAM T TIMER SUB & OSD SYNC INSERT


71
F450
PG1451-4
A12V1
R1455
10
FUSIBLE
C1452
100n
C1451
10µ
IC1451
LF353
OP AMP
A12V1
F451
PG1451-3
F452
PG1451-1
VIDEO
R1453
680
C1455
47n
2
3
4.5V
8
+B
1
4.5V
R1463
220K
C1457
10n
F453
PG1451-2
SYNC
D1452
R1458
2K2
R1464
2K2
-5V
7
R1459
10M
6
1.3V
5
0.6V
-B
4
R1456
33K
R1462
2K2
F454
PG1451-5
A-6V
C1460
47µ
R1457
1K
D1451
R1451
470K
C1458
100p
R1460
68K
R1461
68K
R1465
120K
C1456
1µ
A12V1
IC1452
LMC555
TIMER IC
1
4.5V
2 TRIGGER
DISCHARGE 7
THRES-HOLD 6
3 OUTPUT
CONTROL VOLTAGE 5
4 RESET
+B 8
A12V1
R1454
2K2
C1453
2n2
9V
R1452
220K
C1454
10n
IC4001
µPD4538BC-B7
AC CLOCK DELAY
E490
PG4001-4
B5V
C4001
10µ
R4001
47K
R4002
10K
E491
PG4001-3
CTRL CLOCK
R4004
1K
5V
1 T1
2 T2
4 A
5 B̄
100ms
Q 6
Q̄ 7
5V
CLR 3
8
15 T1
14 T2
12
11 B̄
10sec
Q 10
Q̄ 9
CLR 13
+B 16
E492
PG4001-1
E493
PG4001-2
AC DROP OUT
R4005
1K
C4003
22n

※ VOLTAGE: PB OR REC MODE.

LIST OF ELECTRICAL PARTS



Resistors not referred to are standard, see page 3-12.

PCB 1, 8004766
Digital Signal Processing

IC1001△	8341252	**142**	TC 74HC4053 AF
IC1002	8341251	**152**	HA 11535 MP
IC1003	8341250	**136**	NJM 2217L
IC1004	8341249	**142**	M51271 SP
IC1005	8341248	**151**	M51272 FP
IC1006	8341249	**142**	M51271 SP
IC1007△	8341246	**151**	M65011 FP
IC1008△	8341247	**151**	M50747 FP
IC1009△	8341245	**152**	RC 74HC157M
IC1010△	8341245	**151**	RC 74HC157M
IC1011	8341244	**142**	M52678P
IC1012	8341244	**142**	M52678P
IC1013-△ IC1015△	8341243	**151**	RC 74HC153M
IC1016-△ IC1018△	8341242	**139**	M5M4C500L
IC1019-△ IC1021△	8341243	**151**	RC 74HC153M
IC1022-△ IC1024△	8341245	**151**	RC 74HC157M
IC1025- IC1027	8341241	**142**	M52679P
IC1028△	8341240	**151**	µPD 74HC221 AG
IC1029△	8350064		HT 4683A
IC1030△	8341239	**142**	HD 14053 BFP
IC1031	8341238	**127**	M51489L
IC1032△	8341237	**248**	S-8054 ALR

Q1001	8320828	**51**	2SC 2412 KBRST
Q1002	8320828	**51**	2SC 2412 KBRST
Q1003	8320827	**51**	2SA 1037 KFRS
Q1004	8320827	**51**	2SA 1037 KFRS
Q1005	8320828	**51**	2SC 2412 KBRST
Q1006	8320827	**51**	2SA 1037 KFRS
Q1007- Q1010	8320828	**51**	2SC 2412 KBRST
Q1012	8320827	**51**	2SA 1037 KFRS
Q1014- Q1017	8320827	**51**	2SA 1037 KFRS
Q1018- Q1022	8320828	**51**	2SC 2412 KBRST
Q1023	8320826	**51**	DTC 124K (25)
Q1024	8320827	**51**	2SA 1037 KFRS
Q1025	8320828	**51**	2SC 2412 KBRST
Q1026- Q1028	8320827	**51**	2SA 1037 KFRS
Q1029	8320825	**51**	DTA 124K (15)
Q1030	8320826	**51**	DTC 124K (25)
Q1031	8320827	**51**	2SA 1037 KFRS
Q1032	8320827	**51**	2SA 1037 KFRS
Q1034	8320824	**254**	FMS2
Q1035	8320829	**254**	FMW1
Q1036	8320828	**51**	2SC 2412 KBRST
Q1038	8320827	**51**	2SA 1037 KFRS
Q1039	8320827	**51**	2SA 1037 KFRS
Q1040	8320826	**51**	DTC 124K (25)
Q1041	8320828	**51**	2SC 2412 KBRST
Q1042	8320826	**51**	DTC 124K (25)
Q1043	8320826	**51**	DTC 124K (25)
Q1044	8320823	**51**	DTC 144K-26
Q1045	8320823	**51**	DTC 144K-26
Q1046	8320826	**51**	DTC 124K (25)
Q1047	8320823	**51**	DTC 144K-26
Q1048	8320822	**51**	DTA 144EK-16
Q1050	8320828	**51**	2SC 2412 KBRST
Q1052	8320822	**51**	DTA 144EK-16
Q1053	8320822	**51**	DTA 144EK-16
Q1055	8320822	**51**	DTA 144EK-16

D1001	8300653	**62**	MA 714
D1002	8300654	**63**	DAN 202K
D1004	8300653	**62**	MA 714
D1005- D1007	8300654	**63**	DAN 202K

△ indicates that static electricity may destroy the component.

RT1002	5370387	10 kΩ
RT1003	5370386	47 kΩ
RT1005	5370385	4.7 kΩ
RT1006	5370387	10 kΩ
RT1007	5370387	10 kΩ
RT1008	5370385	4.7 kΩ
RT1009	5370386	47 kΩ
RT1010	5370386	47 kΩ
RT1011	5370385	4.7 kΩ
RT1012	5370384	2.2 kΩ
RT1013	5370384	2.2 kΩ

C1001	4200525	22 µF 20% 10V
C1002	4200145	33 µF 16V
C1006	4200515	4.7 µF 20% 25V
C1011	4200515	4.7 µF 20% 25V
C1012	4100293	1 nF 10% 50V
C1014	4200474	0.1 µF 20% 50V
C1016	4200482	47 µF 20% 10V
C1017	4200426	1 µF 20% 50V
C1018	4200285	0.47 µF -10+50% 63V
C1025	4200426	1 µF 20% 50V
C1027	4200482	47 µF 20% 10V
C1028	4200426	1 µF 20% 50V
C1036	4200665	470 µF 20% 6.3V
C1037	4200574	1 µF 50V
C1040	4200431	10 µF 20% 16V
C1041	4200482	47 µF 20% 10V
C1043	4200688	47 µF 20% 50V
C1045	4200426	1 µF 20% 50V
C1047	4200431	10 µF 20% 16V
C1051	4200431	10 µF 20% 16V
C1052	4200431	10 µF 20% 16V
C1056	4200426	1 µF 20% 50V
C1057	4200431	10 µF 20% 16V
C1061	4200688	47 µF 20% 50V
C1062	4200426	1 µF 20% 50V
C1068	4200431	10 µF 20% 16V
C1069	4200423	2.2 µF 20% 50V
C1070- C1072	4200688	47 µF 20% 50V
C1073	4200426	1 µF 20% 50V
C1074	4200476	0.47 µF 20% 50V
C1080	4200580	47 µF 16V
C1086	4200688	47 µF 20% 50V
C1088	4200426	1 µF 20% 50V
C1097	4200431	10 µF 20% 16V
C1103	4200431	10 µF 20% 16V
C1106	4200595	100 µF 20% 10V
C1108	4200595	100 µF 20% 10V
C1110	4200595	100 µF 20% 10V
C1113	4200595	100 µF 20% 10V
C1115	4200882	1000 µF 6.3V
C1116	4200580	47 µF 16V
C1123	4200426	1 µF 20% 50V
C1128	4200657	100 µF 20% 16V
C1134	4200580	47 µF 16V
C1137	4200595	100 µF 20% 10V
C1139	4200145	33 µF 16V
C1140	4200515	4.7 µF 20% 25V
C1141	4200426	1 µF 20% 50V
C1142	4200431	10 µF 20% 16V
C1145	4200510	10 µF 20% 16V
C1146	4200665	470 µF 20% 6.3V
C1150	4200665	470 µF 20% 6.3V
C1153	4200883	220 µF 10V
C1157	4200883	220 µF 10V
C1168	4200595	100 µF 20% 10V
C1169	4200884	470 µF 10V
C1179	4200426	1 µF 20% 50V
C1180	4200426	1 µF 20% 50V

CT1001	4340032	90 pF
CT1002	4340032	90 pF

L1002	8020760	Coil 100 µH 10%
L1003	8020760	Coil 100 µH 10%
L1005	8020760	Coil 100 µH 10%
L1006	8020760	Coil 100 µH 10%
L1008	8020760	Coil 100 µH 10%
L1009	8020705	Coil 100 µH 10%
L1010	8020761	Coil 12 µH 10%
L1013	8020705	Coil 100 µH 10%
L1014- L1018	8020760	Coil 100 µH 10%
L1020- L1024	8020760	Coil 100 µH 10%

X1001	8090099	Crystal 17.7 MHz
X1002	8090099	Crystal 17.7 MHz
X1003	8090098	Crystal 8.0 MHz
X1004	8090097	Crystal 20 MHz
X1005	8090096	Crystal 500 kHz

BL1001	8030169	Line filter
BL1002	8030169	Line filter

CP1001	8030168	Band pass filter
CP1002	8030168	Band pass filter
CP1003- CP1005	8030167	Low pass filter
CP1006	6240030	Delay line
CP1007- CP1009	8030166	Line filter
CP1016	8030165	Cer. filter 270 pF 10% 50V
CP1017	8030165	Cer. filter 270 pF 10% 50V
CP1019	8030165	Cer. filter 270 pF 10% 50V
CP1021	8030164	Cer. filter 47 pF 10% 50V
CP1022	8030164	Cer. filter 47 pF 10% 50V
CP1024- CP1026	8030165	Cer. filter 270 pF 10% 50V
CP1028	8030164	Cer. filter 47 pF 10% 50V
CP1029- CP1031	8030165	Cer. filter 270 pF 10% 50V
CP1032	8030166	Line filter
CP1033- CP1036	8030164	Cer. filter 47 pF 10% 50V
CP1037	8030166	Line filter
CP1038	8030163	Low pass filter

PG1001	7220800	Plug 3 pole
PG1002	7220832	Plug 9 pole
PG1003	7220833	Plug 6 pole

PCB 3, 8004787 Battery								
PCB 5, 8004776 Pre/Rec Amp.								
PCB 6, 8004786 Sensor	IC141	8341413	**153**	DN 6851	IC142	8341413	**153**	DN 6851
	Q141	8320884	**64**	PT-483 F1	Q142	8320884	**64**	PT-483 F1
	D141	8330265	**65**	LED GL-451				
	S141	7400397		Switch	S142	7400392		Switch
	PG141	7220891		Socket 30 pole	PG143	7220892		Plug 15 pole
PCB 7, 8400174 Capstan Motor	Q11	8004778	**34**	2SD 1266A				
PCB 11, Y/Chroma Signal Switch 8004792 f/type 4530-4533-4537 8004773 f/type 4532-4538	IC201	8350068		HT 4847F	IC1510	8340639	**127**	M5218L
	IC202	8350066		HT 4848B	IC1512	8341285	**139**	NJM 2234S
	IC203	8350067		HT 4664A	IC1513	8341261	**139**	LA 7016
	IC204	8004802		HES 8020A	IC1514-IC1517	8341285	**139**	NJM 2234S
	IC205	8341261	**139**	LA 7016	IC1518	8341261	**139**	LA 7016
	IC251△	8004796		HES 5082 only type 4533	IC1519	8341285	**139**	NJM 2234S
	IC301	8350065		HT 4809	IC1520	8341288	**139**	NJM 2245S
	IC351	8340870	**140**	BA 7025L	IC1522△	8004785		HES 8063A
	IC801	8341284	**136**	µPC 1484CA	IC1523	8341287	**105**	M5278D06
	IC802	8341283	**105**	M5F7806L	IC1524	8341285	**139**	NJM 2234S
	IC803	8341282	**103**	BA 6993	IC1525	8341288	**139**	NJM 2245S
	IC1401△	8004627		HES 8616A	IC1526	8341288	**139**	NJM 2245S
	IC1402	8340703	**132**	M5278L56	IC1527	8341285	**139**	NJM 2234S
	IC1502-△ IC1504△	8340782	**136**	µPD 4094BC	IC1528	8341261	**139**	LA 7016
	IC1505L-R	8341285	**139**	NJM 2234S	IC1529△	8004803		HES 8051C
	IC1506	8340639	**127**	M5218L	IC1530	8341289	**127**	M51489L
	IC1507L-R	8341286	**127**	M5201L	IC1801	8340922	**136**	IR-3P02
	IC1508L-R	8341286	**127**	M5201L	IC1802	8340738	**103**	BA 4560
	IC1509L-R	8341285	**139**	NJM 2234S	IC1803	8341293	**139**	LA 1150
	Q201	8320843	**17**	2SC 3391C	Q803	8320837	**17**	2SC 1740SR
	Q202	8320837	**17**	2SC 1740SR	Q804	8320588	**32**	2SD 1276
	Q203	8320837	**17**	2SC 1740SR	Q1502	8320845	**17**	2SA 1390C
	Q205	8320837	**17**	2SC 1740SR	Q1801	8320837	**17**	2SC 1740SR
	Q301	8320842	**17**	2SA 1374C	Q1802	8320837	**17**	2SC 1740SR
	Q801	8320687	**17**	2SA 844CD-TB				
	QR201-QR203	8320720	**17**	RT 1N241S	QR205	8320832	**27**	DTC 144ES
	QR204	8320832	**27**	DTC 144ES	QR301	8320720	**17**	RT 1N241S
					QR302	8320720	**17**	RT 1N241S
	D201-D208	8300590	**214**	1SS 254	D1452	8300590	**214**	1SS 254
	D301-D305	8300590	**214**	1SS 254	D1501-D1503	8300663	**214**	1SR35-100A
	D802	8300663	**214**	1SR35-100A	D1504-D1506	8300590	**214**	1SS 254
	D804	8300590	**214**	1SS 254	D1510	8300590	**214**	1SS 254
	D806	8300662	**209**	1SS 130	D1511	8300590	**214**	1SS 254
	D1401	8300590	**214**	1SS 254	D1802	8300590	**214**	1SS 254
	D1451	8300590	**214**	1SS 254				
	ZD351	8300528	**214**	HZ6A-2	ZD804	8300666	**214**	HZS5-C2
	ZD801	8300668	**214**	HZS4	ZD805	8300657	**214**	HZS6-C2
	ZD802	8300667	**214**	HZS30	ZD806	8300665	**214**	HZ7B
	ZD803	8300666	**214**	HZS5-C2				

△ indicates that static electricity may destroy the component.

R307	5020797	68 Ω 5% 1W	R1455	5020746	100 Ω 5% 0.33W
R837	5021042	22 Ω 5% 1/2W	R1803	5020881	22 Ω 10% 1/4W

RT301	5370398	4.7 kΩ	RT1802	5370394	470 kΩ
RT351	5370397	470 Ω	RT1803	5370393	10 kΩ
RT801	5370399	4.7 kΩ	RT1804	5370393	10 kΩ
RT1501	5370396	2.2 kΩ	RT1807	5370391	47 kΩ
RT1801	5370395	220 kΩ			

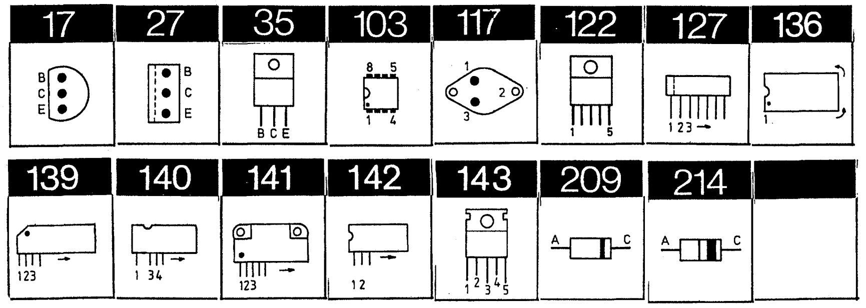
C201-	4010041	10 nF -20+80% 40V	C359	4200145	33 µF 16V
C203			C360	4200425	10 µF 50V
C204	4010033	820 pF 10% 63V	C361	4000207	33 pF 5% 63V
C205	4000186	33 pF 5% 63V	C801	4200573	0.47 µF 50V
C206	4200580	47 µF 16V	C802	4130305	33 nF 10% 63V
C207	4010076	22 nF -20+100% 40V	C803	4200517	2.2 µF 20% 50V
C208	4000194	56 pF 5% 63V	C804	4100241	6.8 nF 5% 63V
C209	4000373	15 pF 5% 50V	C805	4130302	33 nF 10% 63V
C210	4200515	4.7 µF 20% 25V	C806	4130215	220 nF 20% 63V
C211	4003134	27 pF 2% 63V	C807-	4000377	10 nF 20% 16V
C212	4200595	100 µF 20% 10V	C810		
C213	4200580	47 µF 16V	C811	4200580	47 µF 16V
C215	4200510	10 µF 20% 16V	C812	4200438	100 µF 16V
C216	4010076	22 nF -20+100% 40V	C814	4200439	100 µF 50V
C217	4200600	470 µF 20% 16V	C815	4200146	3.3 µF 50V
C218	4200510	10 µF 20% 16V	C816	4200510	10 µF 20% 16V
C219	4200551	33 µF 20% 16V	C817	4010076	22 nF -20+100% 40V
C220	4200580	47 µF 16V	C818	4200580	47 µF 16V
C221	4200580	47 µF 16V	C819	4200146	3.3 µF 50V
C222	4200515	4.7 µF 20% 25V	C820	4000377	10 nF 20% 16V
C223	4000243	100 pF 5% 63V	C821	4000377	10 nF 20% 16V
C224	4200515	4.7 µF 20% 25V	C822	4003128	100 pF 5% 63V
C225	4200510	10 µF 20% 16V	C831	4130215	220 nF 20% 63V
C226	4200625	3.3 µF 20% 50V	C832	4000377	10 nF 20% 16V
C227	4200580	47 µF 16V	C833	4200510	10 µF 20% 16V
C229	4200580	47 µF 16V	C834	4000377	10 nF 20% 16V
C230	4010076	22 nF -20+100% 40V	C835	4200510	10 µF 20% 16V
C231	4200580	47 µF 16V	C836	4000377	10 nF 20% 16V
C232	4200580	47 µF 16V	C837	4200510	10 µF 20% 16V
C233	4010041	10 nF -20+80% 40V	C838	4000377	10 nF 20% 16V
C235	4200440	220 µF 10V	C839	4200510	10 µF 20% 16V
C236	4010110	270 pF 10% 63V	C840	4000377	10 nF 20% 16V
C237	4130223	47 nF 10% 63V	C841	4200438	100 µF 16V
C238-	4200580	47 µF 16V	C842	4200577	10 µF 16V
C242			C1402	4200425	1 µF 50V
C243	4000374	27 pF 50% 50V	C1404	4200688	47 µF 20% 50V
C244	4000111	22 nF 2% 63V	C1410	4200445	1000 µF 16V
C246	4000111	22 nF 2% 63V	C1411	4000378	22 nF -20+80% 25V
C251	4000111	22 nF 2% 63V	C1412	4000378	22 nF -20+80% 25V
C252	4003128	100 pF 5% 63V	C1414	4000378	22 nF -20+80% 25V
C301	4200510	10 µF 20% 16V	C1415	4000029	220 pF 5% 63V
C302	4130382	56 nF 5% 63V	C1418	4130193	22 nF 20% 63V
C303	4200510	10 µF 20% 16V	C1419	4200596	100 µF 20% 6.3V
C304	4130176	33 nF 20% 63V	C1430	4200146	3.3 µF 50V
C305	4200600	470 µF 20% 16V	C1444-	4000389	68 pF 50% 50V
C306	4200512	1 µF 20% 50V	C1447		
C307	4000023	150 pF 5% 63V	C1451	4200577	10 µF 16V
C308	4000376	270 pF 10% 50V	C1452	4130179	100 nF 20% 63V
C309	4000188	39 pF 5% 63V	C1453	4010027	1 nF 10% 63V
C310	4000076	18 pF 2% 63V	C1454	4130214	10 nF 20% 63V
C311	4200510	10 µF 20% 16V	C1455	4130256	15 nF 20% 63V
C312	4200510	10 µF 20% 16V	C1456	4200574	1 µF 50V
C313	4010031	680 pF 10% 63V	C1457	4130214	10 nF 20% 63V
C314	4000377	10 nF 20% 16V	C1458	4000186	33 pF 5% 63V
C315	4130217	330 nF 5% 63V	C1460	4200580	47 µF 16V
C316	4000195	56 pF 5% 63V	C1501L-	4200485	3.3 µF 20% 50V
C317	4130270	68 nF 5% 63V	C1509L		
C318	4000188	39 pF 5% 63V	C1501R-	4200485	3.3 µF 20% 50V
C351	4000377	10 nF 20% 16V	C1509R		
C352	4000215	68 pF 5% 63V	C1510	4200580	47 µF 16V
C353	4130290	68 nF 20% 63V	C1511	4010076	22 nF -20+100% 40V
C354	4200485	3.3 µF 20% 50V	C1512	4200580	47 µF 16V
C355	4010076	22 nF -20+100% 40V	C1513	4010076	22 nF -20+100% 40V
C356	4200436	47 µF 10V	C1514	4200600	470 µF 20% 16V
C357	4010076	22 nF -20+100% 40V	C1515	4130255	22 nF 5% 63V
C358	4200430	4.7 µF 50V	C1522	4100238	3.3 nF 5% 63V

C1523	4200510	10 µF 20% 16V
C1524	4000377	10 nF 16V
C1525	4200580	47 µF 16V
C1526	4200580	47 µF 16V
C1527	4200510	10 µF 20% 16V
C1528	4200512	1 µF 20% 50V
C1529	4200430	4.7 µF 50V
C1530	4000026	22 pF 2% 63V
C1531	4010105	1 nF 63V
C1532	4200364	47 µF -10+50% 10V
C1539L-R	4200574	1 µF 50V
C1540	4200577	10 µF 16V
C1541	4200577	10 µF 16V
C1542	4200580	47 µF 16V
C1543-C1545	4200577	10 µF 16V
C1547	4200580	47 µF 16V
C1548	4200577	10 µF 16V
C1549	4200438	100 µF 16V
C1550	4200580	47 µF 16V
C1551	4200894	47 µF 16V
C1552	4200577	10 µF 16V
C1553	4010061	2.2 nF 10% 63V
C1554-C1559	4200577	10 µF 16V
C1560	4010097	22 nF -20+80% 40V
C1561	4200577	10 µF 16V
C1562	4200577	10 µF 16V
C1563	4010097	22 nF -20+80% 40V
C1564	4010097	22 nF -20+80% 40V
C1565	4200577	10 µF 16V
C1566	4200577	10 µF 16V
C1567	4010097	22 nF -20+80% 40V
C1568	4010061	2.2 nF 10% 63V
C1569	4200577	10 µF 16V
C1570	4200577	10 µF 16V
C1571	4200438	100 µF 16V
C1572	4200577	10 µF 16V
C1573	4200894	47 µF 16V
C1574	4000069	100 pF 5% 63V
C1576	4200577	10 µF 16V
C1577	4200577	10 µF 16V
C1579	4200894	47 µF 16V
C1580	4200577	10 µF 16V
C1581	4200577	10 µF 16V
C1582	4000243	100 pF 5% 63V
C1583	4200665	470 µF 20% 6.3V
C1584	4000243	100 pF 5% 63V
C1585	4200577	10 µF 16V
C1586	4200438	100 µF 16V
C1588	4010097	22 nF -20+80% 40V
C1589	4200577	10 µF 16V
C1596	4200485	3.3 µF 20% 50V
C1597	4010097	22 nF -20+80% 40V
C1598	4000378	22 nF -20+80% 25V
C1599	4200577	10 µF 16V
C1801	4000207	33 pF 5% 63V
C1802	4000194	56 pF 5% 63V
C1803	4200444	470 µF 16V
C1804	4010142	10 nF -20+80% 40V
C1805	4200430	4.7 µF 50V
C1806	4200577	10 µF 16V
C1807	4000164	12 pF 2% 63V
C1809	4000377	10 nF 16V
C1810-C1813	4130179	100 nF 20% 63V
C1814	4130176	33 nF 20% 63V
C1815	4100297	68 nF 5% 100V
C1816	4130290	68 nF 20% 63V
C1817	4200544	22 µF 20% 16V
C1818	4200544	22 µF 20% 16V
C1819	4200485	3.3 µF 20% 50V
C1820	4200580	47 µF 16V
C1821	4130290	68 nF 20% 63V
C1822	4003134	27 pF 2% 63V
C1823	4130290	68 nF 20% 63V
C1824	4000216	470 pF 5% 63V
C1825	4000194	56 pF 5% 63V
C1826	4130290	68 nF 20% 63V
C1827	4200425	1 µF 50V
C1828	4000216	470 pF 5% 63V
C1829	4000075	12 pF 2% 63V
C1830	4200425	1 µF 50V
C1831	4200425	1 µF 50V
C1832	4000207	33 pF 5% 63V
C1833	4130223	47 nF 10% 63V
C1834	4130223	47 nF 10% 63V
C1835	4200485	3.3 µF 20% 50V
C1836	4200485	3.3 µF 20% 50V
C1841	4010105	1 nF 10% 63V
C1842	4200425	1 µF 50V
C1843	4130193	22 nF 20% 63V
C1846	4010076	22 nF -20+100% 40V

L201	8020767	Coil 100 µH 10%
L202	8020777	Coil 33 µH 5%
L203	8020767	Coil 100 µH 10%
L204	8020776	Coil 82 µH
L205	8020775	Coil 33 µH 10%
L206	8020774	Coil 56 µH
L207	8020767	Coil 100 µH 10%
L208	8020787	Coil 100 µH
L209	8020787	Coil 100 µH
L210	8020774	Coil 56 µH
L211	8020786	Coil 220 µH 10%
L212	8020767	Coil 100 µH 10%
L301	8020784	Coil 8.2 mH
L302	8020783	Coil 15 µH
L303	8020782	Coil 10 µH 10%
L304	8020774	Coil 56 µH
L305	8020781	Coil 39 µH
L306	8020780	Coil 27 µH
L307	8020779	Coil 820 µH 10%
L308	8020778	Coil 220 µH
L309	8020786	Coil 220 µH 10%
L310	8020781	Coil 39 µH
L352	8020785	Coil
L1401	8020778	Coil 220 µH
L1501	8020790	Coil 100 µH 10%
L1502	8020790	Coil 100 µH 10%
L1505	8020789	Coil 15 mH
L1510	8020778	Coil 220 µH
L1801	8020629	Coil 12 µH
L1802	8020788	Coil 15 µH 10%

CF1801	8030188	Filter 5.74 MHz
CF1802	8030187	Filter 5.5 MHz

CP201	8030186	Filter 4.4 MHz
CP202	8030185	Filter 3.5 MHz
CP203	8030184	Coil 4.43 MHz
CP204	8030182	Filter 3.6 MHz
CP301	8030183	Filter 4.43 MHz
CP302	6240031	Delay line
CP351	8030181	Filter 4.5 MB
CP1801	8030189	Filter 5.5 MHz
CP1802	8030189	Filter 5.5 MHz
CP1803	8030180	Coil 55 kHz
CP1804	8030179	Filter 54.7 kHz
CP1805	8030189	Filter 5.5 MHz



Resistors not referred to are standard, see page 3-12.

PG201	7220856	Plug 13 pole	PG1451	7220890	Plug 4 pole
PG202	7220838	Plug 7 pole	PG1501	7220837	Plug 8 pole
PG203	7220857	Plug 2 pole	PG1502	7220844	Plug 5 pole
PG205	7220840	Plug 2 pole	PG1504	7220842	Plug 3 pole
PG801	7220858	Plug 10 pole	PG1505	7220844	Plug 5 pole
PG1401	7220588	Plug 7 pole	PG1506	7220835	Plug 7 pole
PG1402	7220855	Plug 6 pole	PG1508	7220839	Socket 30 pole
PG1403	7220832	Plug 9 pole	PG1510	7220839	Plug 30 pole
PG1404	7220837	Plug 8 pole	PG1801	7220846	Plug 9 pole
PG1405	7220854	Plug 3 pole			

PCB 12, 8004777 Digital 5V Power Supply

IC2954	8341229	**122**	L780S05

Q2951	8320614	**17**	2SC 1741QR

D2960	8300590	**214**	1SS 254

C2981	4200477	4.7 μF 20% 25V
C2982	4200364	47 μF -10+50% 10V

PG2915	7220800	Plug 3 pole
PG2954	7220804	Plug 3 pole yellow

PCB 21, 8004764 Main (Servo, HiFi Audio & System Control)

IC501	8341267	**136**	HA 12117 NT	IC606	8341261	**139**	LA 7016
IC502	8341266	**140**	BA 7755	IC607	8341229	**143**	L 780S05
IC503	8341263	**136**	HA 12118 NT	IC901△	8341298	**136**	HD 614088S B99
IC505△	8340782	**136**	μPD 4094 BC				
IC507	8340639	**127**	M 5218L	IC902	8341258	**142**	BA 6209 U4
IC601△	8341264	**136**	HD 49716 NT	IC903	8004800		PWB Tape end det.
IC602	8341265	**136**	M 54874P				
IC603	8341262	**141**	HA 13403	IC904△	8004801		PWB Viss control
IC604	8004799		BX 7506				
IC605△	8340706	**103**	MSM 5258 RS	IC1653	8340705	**139**	NJM 2903S

Q502	8320533	**17**	2SA 673C	Q607	8320837	**17**	2SC 1740SR
Q505	8320837	**17**	2SC 1740SR	Q612	8320533	**17**	2SA 673C
Q507	8320836	**17**	2SC 1741	Q613	8320607	**117**	2SD 1251-P0
Q516	8320687	**17**	2SA 844CD-TB	Q901	8320833	**17**	2SD 1504E
Q517	8320613	**17**	2SD 468C	Q902	8320533	**17**	2SA 673
Q518	8320687	**17**	2SA 844CD-TB	Q1651	8320588	**35**	2SD 1276
Q519	8320820	**17**	2SC 2784E	Q1652	8320837	**17**	2SC 1740SR
Q604	8320837	**17**	2SC 1740SR				

QR501	8320832	**27**	DTC 144ES	QR605	8320832	**27**	DTC 144ES
QR503	8320832	**27**	DTC 144ES	QR608	8320832	**27**	DTC 144ES
QR504	8320832	**27**	DTC 144ES	QR609	8320832	**27**	DTC 144ES
QR508	8320832	**27**	DTC 144ES	QR611	8320832	**27**	DTC 144ES
QR509	8320832	**27**	DTC 144ES	QR901	8320832	**27**	DTC 144ES
QR520	8320832	**27**	DTC 144ES	QR902	8320832	**27**	DTC 144ES
QR521	8320832	**27**	DTC 144ES	QR1654	8320832	**27**	DTC 144ES
QR601-QR603	8320832	**27**	DTC 144ES				

△ indicates that static electricity may destroy the component.

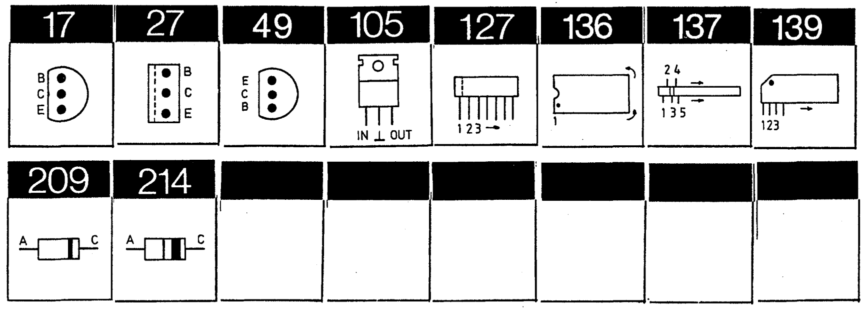
D501	8300590	**214**	1SS 254	D625	8300590	**214**	1SS 254
D502	8300590	**214**	1SS 254	D627	8300590	**214**	1SS 254
D504-D511	8300590	**214**	1SS 254	D636-D638	8300590	**214**	1SS 254
D513	8300590	**214**	1SS 254	D902-D904	8300590	**214**	1SS 254
D515-D517	8300590	**214**	1SS 254	D906	8300590	**214**	1SS 254
D601-D605	8300590	**214**	1SS 254	D908	8300590	**214**	1SS 254
D607-D610	8300590	**214**	1SS 254	D910	8300590	**214**	1SS 254
D612	8300590	**214**	1SS 254	D911	8300590	**214**	1SS 254
D615-D619	8300590	**214**	1SS 254	D913-D918	8300590	**214**	1SS 254
				D1653-D1655	8300590	**214**	1SS 254

ZD501	8300660	**209**	HZ 9A2	ZD903	8300657	**214**	HZS6-C2
ZD502	8300660	**209**	HZ 9A2	ZD904	8300665	**214**	HZ 7B
ZD503	8300481	**209**	HZ 7B3L	ZD1651	8300658	**214**	HZS15-3
ZD901	8300659	**214**	HZS9 A2	ZD1654	8300528	**209**	HZ6A-2
ZD902	8300657	**214**	HZS6-C2				

R574	5021147	2.2 Ω 5% 1/8W
R659	5100272	0.47 Ω 5% 1/2W

RT501L	5370391	47 kΩ	RT601	5370388	47 kΩ
RT501R	5370391	47 kΩ	RT602	5370392	470 kΩ
RT503	5370391	47 kΩ	RT605	5370392	470 kΩ
RT504	5370390	100 kΩ	RT606	5370392	470 kΩ
RT505	5370389	1 kΩ			

C502	4200145	33 μF 16V	C552	4130348	2.7 nF 5% 63V
C503	4010041	10 nF -20+80% 40V	C553	4010060	22 nF -20+80% 40V
C504	4010041	10 nF -20+80% 40V	C554	4010027	1 nF 10% 63V
C505	4200426	1 μF 20% 50V	C555	4010027	1 nF 10% 63V
C506	4000187	330 pF 5% 63V	C556	4130467	6.8 nF 10% 100V
C507	4200431	10 μF 20% 16V	C557	4010041	10 nF -20+80% 40V
C508	4000092	180 pF 5% 63V	C558	4010060	22 nF -20+80% 40V
C509	4200423	2.2 μF 20% 50V	C561L-R	4010027	1 nF 10% 63V
C511	4200440	220 μF 10V	C562	4200425	1 μF 50V
C512	4010122	680 pF 10% 63V	C565	4010041	10 nF -20+80% 40V
C513	4200477	4.7 μF 20% 25V	C568L-R	4000207	33 pF 5% 63V
C514	4130220	10 nF 5% 63V	C571	4010161	560 pF 10% 63V
C515	4200423	2.2 μF 20% 50V	C572	4000349	100 pF 2% 63V
C516	4130220	10 nF 5% 63V	C580	4200593	47 μF 20% 10V
C517	4200578	10 μF 25V	C581L-R	4200485	3.3 μF 20% 50V
C518	4130220	10 nF 5% 63V	C597	4200438	100 μF 16V
C519	4130220	10 nF 5% 63V	C601	4130270	68 nF 5% 63V
C520	4200577	10 μF 16V	C602	4200577	10 μF 16V
C522	4200577	10 μF 16V	C603	4200438	100 μF 16V
C523	4200577	10 μF 16V	C604	4200480	22 μF 20% 10V
C524L-R	4010064	560 pF 10% 63V	C606	4200572	220 nF 50V
C525L-R	4200599	470 μF 20% 6.3V	C607	4130244	22 nF 5% 63V
C526L-R	4010041	10 nF -20+80% 40V	C608	4010060	22 nF -20+80% 40V
C528L-R	4010041	10 nF -20+80% 40V	C609	4200325	1 μF 10% 35V
C530L-R	4010166	1.5 nF 50V	C610	4200577	10 μF 16V
C531	4010041	10 nF -20+80% 40V	C611	4200580	47 μF 16V
C532	4010118	330 pF 10% 63V	C612	4010063	4.7 μF 10% 63V
C533	4130387	47 nF 1% 63V	C613	4010027	1 nF 10% 63V
C534	4010118	330 pF 10% 63V	C614	4010041	10 nF -20+80% 40V
C535	4000071	270 pF 5% 63V	C615	4200108	4.7 μF 20% 25V
C536	4200426	1 μF 20% 50V	C616	4200593	47 μF 20% 10V
C537	4200440	220 μF 10V	C617	4010076	22 nF -20+100% 40V
C538	4200599	470 μF 20% 6.3V	C618	4010067	1.5 nF 10% 63V
C539	4010041	10 nF -20+80% 40V	C619	4200108	4.7 μF 20% 25V
C543	4200431	10 μF 20% 16V	C621	4130223	47 nF 10% 63V
C544	4200145	33 μF 16V	C622	4200577	10 μF 16V
C545	4010061	2.2 nF 10% 63V	C623-C625	4010041	10 nF -20+80% 40V
C546	4010063	4.7 μF 10% 63V	C626	4130270	68 nF 5% 63V
C547	4010041	10 nF -20+80% 40V	C627	4130223	47 nF 10% 63V
C548	4200593	47 μF 20% 10V	C628	4011025	3.3 nF 10% 63V
C549	4010041	10 nF -20+80% 40V	C629	4130270	68 nF 5% 63V
C550	4200444	470 μF 16V	C630	4100238	3.3 nF 5% 63V
C551	4010031	680 pF 10% 63V			



Resistors not referred to are standard, see page 3-12.

C631	4130223	47 µF 10% 63V	C906	4010076	22 nF -20+100% 40V
C632-	4010063	4.7 nF 10% 63V	C907	4010041	10 nF -20+80% 40V
C635			C908	4010041	10 nF -20+80% 40V
C636	4200439	100 µF 50V	C911	4200580	47 µF 16V
C637	4010063	4.7 nF 10% 63V	C912	4010041	10 nF -20+80% 40V
C640	4200579	22 µF 25V	C913	4010041	10 nF -20+80% 40V
C641-	4200577	10 µF 16V	C914	4200580	47 µF 16V
C643			C915	4010060	22 nF -20+80% 40V
C644	4010063	4.7 nF 10% 63V	C916	4010060	22 nF -20+80% 40V
C645	4010116	1.5 nF 50V	C918	4010041	10 nF -20+80% 40V
C646	4010116	1.5 nF 50V	C921	4000085	100 pF 2% 63V
C647	4010063	4.7 nF 10% 63V	C922	4000085	100 pF 2% 63V
C648	4010063	4.7 nF 10% 63V	C924	4010076	22 nF -20+100% 40V
C650	4130307	150 nF 10% 63V	C1630	4200580	47 µF 10V
C651	4010060	22 nF -20+80% 40V	C1631	4010076	22 nF -20+100% 40V
C653	4130193	22 nF 20% 63V	C1632	4000111	22 pF 2% 63V
C654	4130223	47 nF 10% 63V	C1633	4000111	22 pF 2% 63V
C655	4010063	4.7 nF 10% 63V	C1634	4200580	47 µF 16V
C656	4200577	10 µF 16V	C1635	4200580	47 µF 16V
C657	4010060	22 nF -20+80% 40V	C1636	4200438	100 µF 16V
C658	4010060	22 nF -20+80% 40V	C1637	4200430	4.7 µF 50V
C694	4010067	1.5 nF 10% 63V	C1651	4200144	47 µF 50V
C901	4200580	47 µF 16V	C1652	4200439	100 µF 50V
C902	4010076	22 nF -20+100% 40V	C1654	4010076	22 nF -20+100% 40V
C903	4010076	22 nF -20+100% 40V	C1656	4200577	10 µF 16V
C904	4000207	33 pF 5% 63V	C1657	4200588	47 µF 20% 10V
C905	4000207	33 pF 5% 63V			

L501	8020767	Coil 100 µH 10%	L597	8020818	Coil 100 µH
L503	8020483	Coil 15 mH	L901	8020767	Coil 100 µH 10%
L504	8020766	Coil 180 µH 10%	L1630	8020767	Coil 100 µH 10%
L505	8020765	Coil 220 µH 10%			

T501	8020763	Oscillator coil
T502	8020764	Oscillator coil

CP502	8030172	Low pass filter 1.4 MHz
CP503	8030170	Low pass filter 1.8 MHz
CP504	8030172	Low pass filter 1.4 MHZ

CE901	8090098	Crystal 8 MHz

X1603	8090100	Crystal 3.58 MHz

PG504	7220836	Plug 2 pole	PG604	7220842	Plug 3 pole
PG507	7220835	Plug 7 pole	PG605	7220841	Plug 11 pole
PG511	7220834	Plug 4 pole	PG607	7220840	Plug 2 pole
PG512	7220831	Plug 3 pole	PG901	7220839	Socket 30 pole
PG513	7220837	Plug 8 pole	PG902	7220833	Plug 6 pole
PG514	7220846	Plug 9 pole	PG903	7220832	Plug 9 pole
PG515	7220845	Plug 5 pole	PG904	7220838	Plug 7 pole
PG516	7220844	Plug 5 pole	PG905	7220847	Plug 8 pole
PG551-	7220843	Plug 10 pole	PG906	7220802	Plug 2 pole yellow
PG553			PG1651	7220799	Plug 2 pole
PG602	7220801	Plug 5 pole	PG1652	7220799	Plug 2 pole

PCB 22, 8004763 Audio NR

IC401	8341235	**136**	BA 7720S	IC405	8340639	**127**	M 5218L
IC402	8341234	**137**	M 51131L	IC406	8340639	**127**	M 5218L
IC403	8340639	**127**	M 5218L				
Q403L-R	8320820	**27**	2SC 2784E	Q404	8320819	**49**	RT 1P441S
ZD401-ZD403	8300651	**209**	HZS6-A3				
C401L-R	4200596		100 μF 20% 6.3V	C416L-R	4200431		10 μF 20% 16V
C402L-R	4200586		0.47 μF 20% 25V	C417	4200426		1 μF 20% 50V
C403L-R	4100238		3.3 nF 5% 63V	C418	4200431		10 μF 20% 16V
C404L-R	4100239		4.7 nF 5% 63V	C419	4010041		10 nF -20+80% 40V
C405L-R	4130214		10 nF 20% 63V	C420	4010041		10 nF -20+80% 40V
C406L-R	4200477		4.7 μF 20% 25V	C421	4200482		47 μF 20% 10V
C407L-R	4130193		22 nF 20% 63V	C422	4010041		10 nF -20+80% 40V
C408L-R	4200510		10 μF 20% 16V	C423	4200482		47 μF 20% 10V
C409L-R	4000016		10 pF ±0.25 pF 50V	C424L-R	4200423		2.2 μF 20% 50V
C410L-R	4130176		33 nF 20% 63V	C425L-R	4200485		3.3 μF 20% 50V
C411L-R	4200580		47 μF 16V	C426	4200485		3.3 μF 20% 50V
C413	4200426		1 μF 20% 50V	C431L-R	4200476		0.47 μF 20% 50V
C414L-R	4200431		10 μF 20% 16V	C433L-R	4010061		2.2 nF 10% 63V
C415L-R	4200426		1 μF 20% 50V				
L401L-R	8022308		Coil				
CP401L-R	8022309		Band pass filter				
PG451-PG453	7220803		Socket 10 pole				

PCB 23, 8004769 Mic & Headphone

IC504	8340639	**127**	M 5218L				
C540	4010112		1 nF 10% 50V	C542	4200577		10 μF 16V
J502	7220896		Socket headphone	J503	7220895		Socket mini jack
PG561	7229095		Socket 9 pole				

PCB 24, RF Signal
8004771 f/type 4530-4533-4537
8004795 f/type 4532-4538

IC3501	8340049	**105**	M5F7812L	IC3503	8341288	**139**	NJM 2245S
IC3502	8341289	**127**	M51489L				
Q3501	8320845	**17**	2SA 1390C	Q3502	8320837	**17**	2SC 1740SR
D3501	8300590	**214**	1SS 254	D3502	8300590	**214**	1SS 254
RT3501	5370401		50 kΩ	RT3503	5370396		2.2 kΩ
RT3502	5370401		50 kΩ				
C3501	4000377		10 nF 20% 16V	C3512	4200576		4.7 μF 25V
C3502	4200894		47 μF 16V	C3513	4200574		1 μF 50V
C3503	4000377		10 nF 20% 16V	C3514	4200593		47 μF 20% 10V
C3504	4200438		100 μF 16V	C3515	4200593		47 μF 20% 10V
C3505	4000377		10 nF 20% 16V	C3516	4200577		10 μF 16V
C3506	4200580		47 μF 16V	C3517	4000377		10 nF 20% 16V
C3507	4200438		100 μF 16V	C3518	4200894		47 μF 16V
C3508	4200894		47 μF 16V	C3519	4000377		10 nF 20% 16V
C3509	4000069		100 pF 5% 63V	C3520	4200580		47 μF 16V
C3510	4010027		1 nF 10% 63V	C3521	4200580		47 μF 16V
C3511	4000214		22 pF 5% 63V	C3522	4200577		10 μF 16V
L3501	8020767		Coil 100 μH 10%				
CP3501	8030178		Band pass filter 5.5 MHz				

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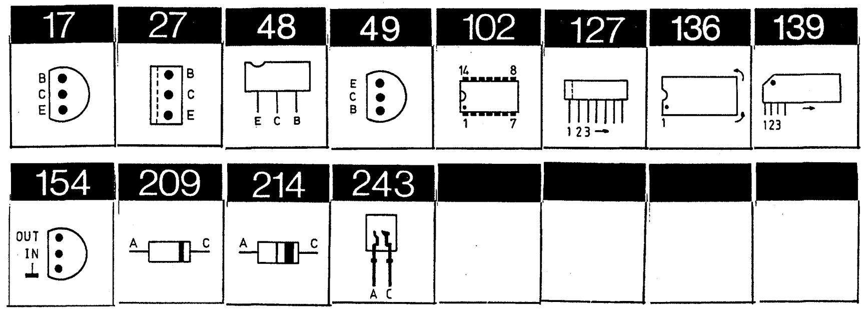


Resistors not referred to are standard, see page 3-12.

S3501	7400393	Switch

PG3501	7220844	Plug 5 pole	PG3503	7220799	Plug 2 pole
PG3502	7220835	Plug 7 pole			

PCB 31, 8004765 Input Socket Panel, Rear

IC1500	8004804		HES 8043	IC1521	8341290	**139**	NJM 2246S
IC1511L-R	8341286	**127**	M 5201L	IC1531L-R	8341285	**139**	NJM 2234S

Q1508	8320845	**17**	2SA 1390C	Q1582	8320844	**17**	2SC 1740S

QR1583	8320832	**27**	DTC 144ES

C1516L-R	4200146	3.3 μF 50V	C1539L-R	4200425	1 μF 50V
C1517L-R	4200146	3.3 μF 50V	C1590	4200580	47 μF 16V
C1518L-R	4200146	3.3 μF 50V	C1591	4200577	10 μF 16V
C1519L-R	4010105	1 nF 10% 63V	C1592	4200665	470 μF 20% 6.3V
C1520L-R	4010105	1 nF 10% 63V	C1593	4000377	10 nF 20% 16V
C1521L-R	4010105	1 nF 10% 63V	C1594	4200577	10 μF 16V
C1533-C1538	4200577	10 μF 16V	C1595	4200577	10 μF 16V

L1503	8020787	Coil 100 μH	L1504	8020787	Coil 100 μH

BL1501-BL1508	8020819	Coil

PCB 41, Operation Control

8004768 f/type 4530-4537
8004791 f/type 4532-4538
8004790 f/type 4533

IC701Δ	8341296	**136**	μPD 75212ACW-113	IC702	8340639	**127**	M 5218L
				IC703Δ	8341414	**154**	S-8052 ALY

Q701	8320590	**48**	2SC 2021S	Q703	8320834	**49**	2SA 1175
Q702	8320687	**17**	2SA 844CD	Q706	8320590	**48**	2SC 2021S

QR761-QR764	8320686	**48**	DTC 144F

D701-D704	8300590	**214**	1SS 254	D731-D733	8300590	**214**	1SS 254
D706-D709	8330250	**243**	LED SEL-2213C	D736-D739	8300590	**214**	1SS 254
D711-D714	8300590	**214**	1SS 254	D744	8300590	**214**	1SS 254
				D753	8300590	**214**	1SS 254
D716-D719	8330250	**243**	LED SEL-2213C	D754	8300590	**214**	1SS 254
				D761-D764	8300590	**214**	1SS 254
D721-D724	8300590	**214**	1SS 254				
D726	8330250	**243**	LED SEL-2213C				

ZD701	8300665	**209**	HZ7B

Δ indicates that static electricity may destroy the component.

LM701	8330251	Display LT-4117			

VR701	5390028	100 kΩ	VR703	5390029	50 kΩ
VR702	5390028	100 kΩ	VR704	5390029	50 kΩ

C701	4200364	47 µF -10+50% 10V	C716	4200574	1 µF 50V
C702	4000378	22 nF -20+80% 25V	C717	4200574	1 µF 50V
C703	4200364	47 µF -10+50% 10V	C718	4000378	22 nF -20+80% 25V
C704	4000378	22 nF -20+80% 25V	C719	4000378	22 nF -20+80% 25V
C705	4200440	220 µF 10V	C791	4200438	100 µF 16V
C706	4000378	22 nF -20+80% 25V	C792	4000378	22 nF -20+80% 25V
C711	4000207	33 pF 5% 63V	C793	4200577	10 µF 16V
C712	4000207	33 pF 5% 63V	C794	4000378	22 nF -20+80% 25V
C713	4000111	22 pF 2% 50V	C795	4010027	1 nF 10% 63V
C714	4340033	20 pF	C796	4010027	1 nF 10% 63V
C715	4200580	47 µF 16V	C797	4000078	68 pF 2% 63V

L701	8020760	Coil 100 µH 10%	L702	8020760	Coil 100 µH 10%

X701	8090102	Crystal 4.19 MHz	X702	8090042	Crystal 32.768 kHz

S701	7400390	Switch, secondary	S721- S724	7400390	Switch, secondary
S702- S704	7400391	Switch, primary	S731- S733	7400390	Switch, secondary
S711	7400390	Switch, secondary	S739	7400392	Switch, secondary lid
S712	7400391	Switch, primary	S740	7400390	Switch, secondary
S713	7400391	Switch, primary			
S714	7400390	Switch, secondary			

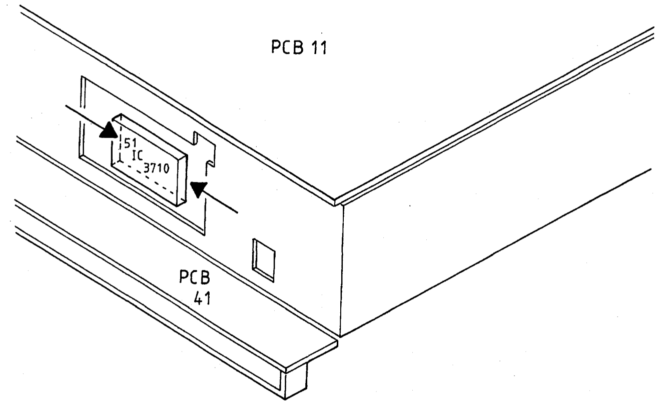
PG707	7220877	Socket 9 pole			

CN701- CN705	6276083	Flat cable 10 pole	CN706	6276084	Flat cable 5 pole

PCB 51, 8004788 Remote, Switch & OSD Control

IC3701△	8004805		HES 8056C
IC3702△	8340109	**102**	BU 4011
IC3710△	8341447	**136**	27C512

When replacing the software 51IC3710, be very careful not to damage the SMD components or the very thin copper foil underneath the software IC. Do not use a screwdriver to loosen the IC from the socket. Use e.g. angled tweezers.



Q3701	8320590	**48**	2SC 2021S	Q3702	8320590	**48**	2SC 2021S

D3701	8300590	**214**	1SS 254	D3703- D3707	8300590	**214**	1SS 254
D3702	8300669	**214**	1SR 35				

C3701	4200364	47 µF -10+50% 10V	C3706	4200573	0.47 µF 50V
C3702	4200364	47 µF -10+50% 10V	C3707	4200474	0.1 µF 20% 50V
C3703	4000378	22 µF -20+80% 25V			

△ indicates that static electricity may destroy the component.

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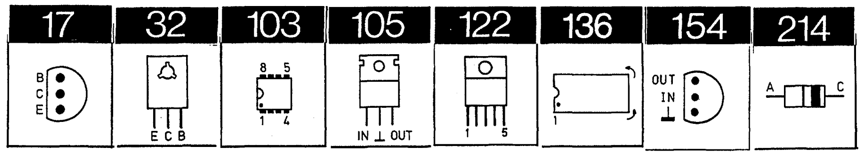


Resistors not referred to are standard, see page 3-12.

PG3701	7220833	Plug 6 pole	PG3709	7220831	Plug 3 pole
PG3702	7220857	Plug 2 pole	PG3710	7220844	Plug 5 pole
PG3703	7220834	Plug 4 pole	PG3711	7220859	Plug 5 pole
PG3704	7220855	Plug 6 pole	PG3712	7220861	Plug 3 pole
PG3705	7220860	Plug 3 pole	PG3713	7220854	Plug 3 pole
PG3706	7220832	Plug 9 pole	PG3721-	7229082	Socket 10 pole
PG3707	7220858	Plug 10 pole	PG3725		
PG3708	7220845	Plug 5 pole	PG3726	7229081	Socket 6 pole

PCB 61, Rectifier
8004761 Diodes
8004760 Transformer

IC853	8341271	**154**	M 5279L06

D851	8300463		S1WD10	D861	8300590	**214**	1SS 254
D852	8300731		RBV-406B	D862	8300590	**214**	1SS 254
D853	8300731		RBV-406B				

C851-	4010226	47 nF -20+80% 50V	C878	4200869	220 µF 16V
C865			C879	4200870	220 µF 10V
C876	4200868	4700 µF 35V	C880	4200871	4700 µF 16V

L851	8020795	Line filter 1.35 mH

F850	6600048	Fuse T 800 mA	F853	6600028	Fuse T 315 mA
F851	6600020	Fuse T 2.5 A	F854	6600028	Fuse T 315 mA
F852	6600020	Fuse T 2.5 A			

T850	8013438	Transformer f/type 4530-4533-4538
	8013439	Transformer f/type 4532-4537

PG853	7220799	Plug 2 pole	PG855	7220801	Plug 5 pole
PG854	7220800	Plug 3 pole	PG859	7220802	Plug 2 pole yellow

	6100185	Mains lead f/type 4530-4533-4538
	6100184	Mains lead f/type 4532
	6270297	Mains lead f/type 4537

PCB 62, 8004669 5V/12V Power Supply

IC2901	8340049	**105**	M5F 7812L
IC2902	8341229	**122**	L 780S05

Q2901	8320817	**32**	2SB 772Q
Q2902	8320614	**17**	2SC 1741
Q2903	8320837	**17**	2SC 1740SR

D2901	8300590	**214**	1SS 254
D2902	8300590	**214**	1SS 254

C2901	4010226	47 nF -20+80% 50V	C2905	4200515	4.7 µF 20% 25V
C2902	4200364	47 µF -10+50% 10V	C2906	4200364	47 µF -10+50% 10V
C2903	4200515	4.7 µF 20% 25V	C2907	4000377	10 nF 20% 16V
C2904	4200873	1000 µF 16V	C2908	4200509	33 µF 20% 25V

PG2912	7220588	Plug 7 pole

PCB 71, 8004732 Timer Sub & OSD Sync. Insert

IC1451	8340195	**103**	LF 353
IC1452	8340144	**103**	LM 555
IC4001Δ	8340702	**136**	HEF 4538

D1451	8300590	**214**	1SS 254
D1452	8300590	**214**	1SS 254

R1455	5020871	10 Ω 10% 0.3W

C1451	4200577	10 μF 16V
C1452	4130179	100 nF 20% 63V
C1453	4010061	2.2 nF 10% 63V
C1454	4000377	10 nF 20% 16V
C1455	4130210	47 nF 20% 63V
C1456	4200574	1 μF 50V
C1457	4000377	10 nF 20% 16V
C1458	4000069	100 pF 5% 63V
C1460	4200580	47 μF 16V
C4001	4200577	10 μF 16V
C4003	4130193	22 nF 20% 63V

PG1451	7220890	Plug 4 pole
PG4001	7220834	Plug 4 pole

Beolink 1000

For remote control Beolink 1000, see the service manual "MASTER CONTROL LINK", no. 3538711.

IR Sensor

For IR sensor (no. 8915500), see the service manual "ACCESSORIES 1", no. 3538599 (Master Control Link 2C). The only special part is the 3.5 mm jack, no. 7220382.

Δ indicates that static electricity may destroy the component.

Standard Resistors:

Resistors 5% 1/2 W

	x1	x10	x100	x1K	x10K	x100K	x1M	x10M
1.0		5011000	5011013	5011028	5011044	5010313	5011069	5011083
1.2	5011406	5011001	5011014	5011030	5011045	5011058	5010421	
1.5	5010727	5011002	5011015	5011031	5011046	5011059	5011071	
1.8	5010857	5010787	5011016	5011033	5011047		5011072	
2.2	5011335	5010708	5010815	5011034	5011048	5011061	5011074	
2.7		5010803	5011018	5010055	5011049	5011062	5011075	
3.3	5020803	5011007	5011019	5011037		5011063	5010381	
3.9		5010782	5011021	5010700	5011051		5010392	
4.7	5010765	5011009	5011022	5010035	5010036	5011065	5011078	
5.6		5011010	5011023	5011041		5011066	5011079	
6.8	5010874	5011011	5011024	5011042	5010810	5011067	5011080	
8.2		5011012	5011026	5011043	5010038	5011068	5011081	

Resistors 5% 1/4 W

	x1	x10	x100	x1K	x10K	x100K	x1M	x10M
1.0	5010592	5010506	5010065	5010040	5010059	5010049	5010054	5010638
1.2		5010595	5010128	5010153	5010046	5010047	5010665	
1.5	5011348	5010468	5010057	5010247	5010053	5010063	5010093	
1.8		5010822	5010362	5010066	5010135	5010072	5010791	
2.2	5010682	5010448	5010092	5010064	5010079	5010120	5010245	
2.7	5010925	5010403	5010000	5010298	5010141	5010083	5010431	
3.3		5010253	5010044	5010076	5010075	5010117	5010848	
3.9	5011377	5010622	5010070	5010069	5010060	5010073	5010714	
4.7	5010888	5010411	5010058	5010048	5010045	5010077	5011513	
5.6	5010706	5010151	5010067	5010041	5010061	5010071	5010658	
6.8	5010904	5010039	5010144	5010052	5010062	5010074		
8.2	5010880	5010056	5010068	5010154	5010091	5010505		

Resistors 5% 1/8 W

	x1	x10	x100	x1K	x10K	x100K	x1M	x10M
1.0		5011464	5011357	5010816	5010935	5011440	5011459	5020875
1.2		5011351	5011084	5011442	5011338	5011341	5011175	
1.5		5011463	5011443	5011178	5011364	5011398	5011460	
1.8			5011350	5011361	5011344	5011468		
2.2	5011032	5011376	5010886	5011353	5010833	5011369	5011342	
2.7		5011471	5011355	5011362	5011366	5011370	5011478	
3.3			5011337	5010827	5011346	5011371	5011462	
3.9		5011438	5011817	5011157	5011457	5011372	5020876	
4.7	5011363	5011038	5011441	5011363	5010937	5011343	5011611	
5.6		5011412	5011358	5010885	5011166	5011340		
6.8		5011356	5011336	5010839	5011367	5011458		
8.2		5011466	5011354	5011339	5011368	5011373		

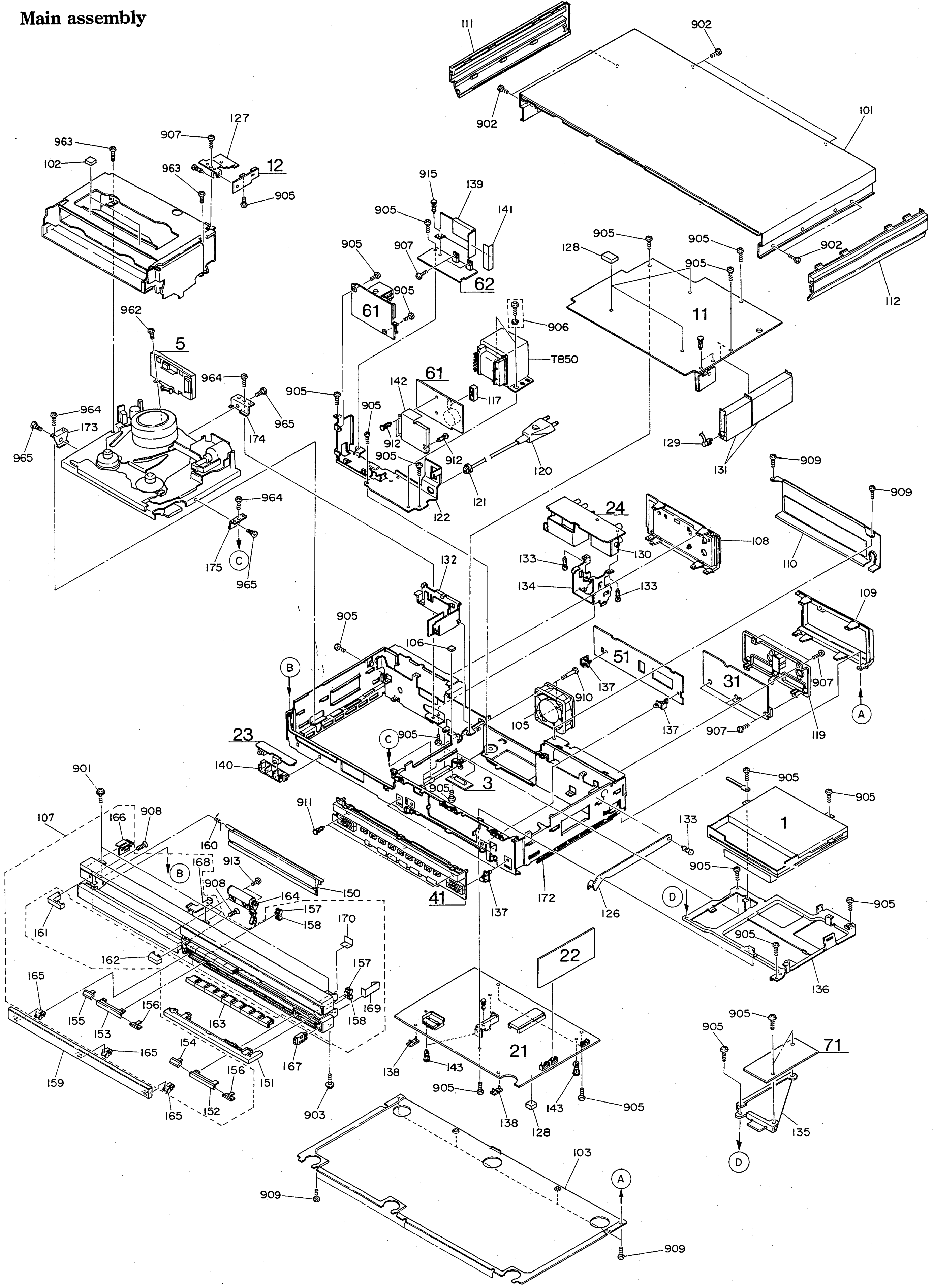
Resistors SMD 2% 1/8 W
SMD 5% 1/8 W

	5%	2%	2%	2%	2%	2%	5%	5%
	x1	x10	x100	x1K	x10K	x100K	x1M	x10M
1.0	5011623	5011647	5011218	5011227	5011241	5011256	5011267	5011730
1.1	5011624	5011648	5011669	5011681	5011689	5011694	5011707	
1.2	5011625	5011649	5011219	5011682	5011490	5011257	5011708	
1.3	5011626	5011650	5011670	5011683	5011242	5011258	5011709	
1.5	5011627	5011651	5011220	5011228	5011243	5011259	5011710	
1.6	5011628	5011652	5011671	5011684	5011690	5011695	5011711	
1.8	5011629	5011653	5011672	5011229	5011244	5011260	5011712	
2.0	5011630	5011654	5011673	5011685	5011691	5011696	5011713	
2.2	5011216	5011655	5011674	5011230	5011245	5011261	5011714	
2.4	5011634	5011656	5011675	5011686	5011246	5011697	5011715	
2.7	5011635	5011657	5011497	5011231	5011247	5011262	5011716	
3.0	5011731	5011658	5011499	5011500	5011692	5011698	5011717	
3.3	5011217	5011659	5011676	5011232	5011248	5011263	5011718	
3.6	5011636	5011660	5011677	5011687	5011249	5011264	5011719	
3.9	5011637	5011661	5011221	5011233	5011491	5011699	5011720	
4.3	5011638	5011662	5011498	5011688	5011492	5011700	5011721	
4.7	5011639	5011269	5011222	5011234	5011250	5011265	5011722	
5.1	5011640	5011663	5011678	5011235	5011493	5011701	5011723	
5.6	5011641	5011664	5011223	5011236	5011251	5011702	5011724	
6.2	5011642	5011665	5011224	5011237	5011693	5011703	5011725	
6.8	5011643	5011666	5011225	5011238	5011252	5011704	5011726	
7.5	5011644	5011667	5011679	5011239	5011253	5011705	5011727	
8.2	5011645	5011270	5011226	5011240	5011254	5011266	5011728	
9.1	5011646	5011668	5011680	5011489	5011255	5011706	5011729	

(Glue dots, approx. 200, part no. 3181932).

LIST OF MECHANICAL PARTS

Main assembly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Main assembly

101	3164764	Top cover, grey metallic
	3164761	Top cover, white
102	3912064	Block of felt
103	3454607	Bottom cover
105	8410014	Fan motor
106	3912065	Block of felt
107	3168814	Front panel, grey metallic
	3168819	Front panel, white
108	3452631	Panel RF socket
109	3320146	Panel frame, A/V socket
110	3452632	Rear cover
111	3168815	Side panel, left, grey metallic
	3168821	Side panel, left, white
112	3168816	Side panel, right, grey metallic
	3168820	Side panel, right, white
117	3164803	Fuse cover
119	3320149	Panel A/V socket
120	6100185	Mains lead f/type 4530-4533-4538
	6100184	Mains lead f/type 4532
	6270297	Mains lead f/type 4537
121	2641119	Holder f/mains lead
122	3151272	Bracket
126	2515061	Service arm
127	3358221	Heat sink
128	2572041	Spacer
129	6276195	Modulator cable
130	8054133	RF Modulator & Booster f/type 4530-4533-4537
	8054134	RF Modulator & Booster f/type 4532-4538
131	8050122	Tuner f/type 4530-4533
	8050123	Tuner f/type 4532-4538
	8050133	Tuner f/type 4537
132	3152705	Holder f/wire bundle
133	2364054	Plastic rivet
134	3152704	Bracket
135	3152741	Holder f/PCB 71
136	3152706	Holder f/ PCB 1
137	3152639	Holder f/PCB 41 & 51
138	3152636	Holder f/ PCB 21
139	3358237	Heat sink
140	3152635	Holder f/ PCB 23
141	3300116	Shield f/heat sink
142	3300111	Shield f/transformer
143	2572040	Spacer
150	3164786	Cassette flap
	2645051	Spacer f/cassette flap
151	2776163	Button Stand-by
152	2560223	Rail f/push button, right
153	2560240	Rail f/push button, left
154	2776164	Push button REC LEVEL L
155	2776165	Push button HEADPHONE L
156	2776166	Push button REC LEVEL R/HEADPHONE R
157	2751024	Carrier f/push buttons L
158	2751025	Carrier f/push buttons R
159	3168817	Secondary door, grey metallic
	3168822	Secondary door, white
160	2810252	Spring
161	2560246	Moulding, left
162	2560245	Moulding, right
163	2776133	Secondary button panel
164	2755037	Damping cylinder
165	3152708	Hinge, grey metallic
	3152742	Hinge, white
166	3152707	Holder, cassette door
167	3034084	Magnetic lock
168	2570038	Ground spring, middle
169	2570044	Ground spring, right
170	3170277	Insulation piece
172	3112349	Chassis, complete
173	2542738	Bracket f/tape deck, left
174	2542739	Bracket f/tape deck, middle
175	2542740	Bracket f/tape deck, right

901	2013162	Screw 3 x 8 mm
902	2013163	Screw 3 x 8 mm
903	2013122	Screw 3 x 10 mm
905	2013164	Screw 3 x 6 mm
906	2017000	Screw 4 x 8 mm
907	2013163	Screw 3 x 8 mm
908	2037000	Screw 2.6 x 6 mm
909	2013163	Screw 3 x 8 mm
910	2013165	Screw 3 x 30 mm
911	2364058	Nylon rivet
912	2364057	Nylon rivet
913	2013166	Screw 2.6 x 8 mm
915	2364045	Nylon rivet
962	2039043	Screw 3 x 4 mm
963	2039069	Screw 3 x 8 mm
964	2013171	Screw 3 x 6 mm
965	2038109	Screw 3 x 7 mm

01Modul	8004766	PCB 1, Digital Signal Processing
03Modul	8004787	PCB 3, Battery
05Modul	8004776	PCB 5, Pre/Rec Amp.
11Modul	8004792	PCB 11, Y/Chroma & Signal Switch f/type 4530-4533-4537
	8004773	PCB 11, Y/Chroma & Signal Switch f/type 4532-4538
12Modul	8004777	PCB 12, Digital 5V Power Supply
21Modul	8004764	PCB 21, Main (Servo, HiFi Audio & System Control)
22Modul	8004763	PCB 22, Audio NR
23Modul	8004769	PCB 23, Mic & Headphone
24Modul	8004771	PCB 24, RF Signal f/type 4530-4533-4537
	8004795	PCB 24, RF Signal f/type 4532-4538
31Modul	8004765	PCB 31, Input Socket Panel, Rear
41Modul	8004768	PCB 41, Operation Control f/type 4530-4537
	8004791	PCB 41, Operation Control f/type 4532-4538
	8004790	PCB 41, Operation Control f/type 4533
51Modul	8004788	PCB 51, Remote, Switch & OSD Control
61Modul	8004761	PCB 61, Rectifier DIODES
	8004760	PCB 61, Rectifier TRANSFORMER
T850	8013438	Transformer f/type 4530-4533-4538
	8013439	Transformer f/type 4532-4537
62Modul	8004669	PCB 62, 5V/12V Power Supply
71Modul	8004732	PCB 71, Timer Sub & OSD Sync. Insert

Transport mechanism assembly

200*	8422066	Tape deck, complete
201	3112350	Chassis f/tape deck, bottom frame
202	2380152	Nut, conical
203	3152659	Holder f/AC tape head
204	8600107	Audio/Control head
205	2812126	Spring
206	2819244	Spring
207	2380010	Nut
208	2854134	Brake f/flywheel
209	2810249	Spring
210	2726161	Supply reel, left
211	2622431	Nylon washer, left
212	2726162	Takeup reel, right
213	2622432	Nylon washer, right
214	2804063	Pressure roller
215	3152660	Holder, complete
216	3014085	Guide plate, threading-in
217	2700077	Gear wheel, left
218	2700078	Gear wheel, right
219	2854135	Base f/left guide roller
220	3015160	Guide roller
221	2854136	Base f/right guide roller
222	3112340	Chassis f/video head
223	8600108	Full erase head
224	2854137	Arm f/full erase head
225	3015161	Guide pole
226	2810237	Spring
227	2816254	Tension band
228	2854147	Arm, tension
229	2810238	Spring
230	3454434	Holder f/pressure roller
231	2854148	Arm f/record prevention arm
232	2810239	Spring
233	3015162	Guide pole
235	8400178	Threading-in mechanism, complete
243	2938268	Brake, complete
244	2700084	Holder w/motor f/threading-in/out
247	2810240	Spring
251	2810241	Spring
253	3015163	Arm w/washer
255	3016023	Guide pole control
256	3152716	Holder
262	4310020	Dew Sensor
501	8600109	Tape head, video head, complete
502	8400175	Motor f/video head
503	2819245	Ground spring
954	2039069	Screw 3 x 8 mm
955	2070041	Threaded pin 3 x 8 mm
956	2039059	Screw 3 x 14 mm
957	2013169	Screw 3 x 12 mm
958	2013170	Screw 3 x 8 mm
959	2039008	Screw 3 x 6 mm
960	2039905	Screw 3 x 12 mm
961	2072112	Threaded pin 2 x 5 mm
966	2039069	Screw 3 x 8 mm
967	2013166	Screw 2.6 x 8 mm

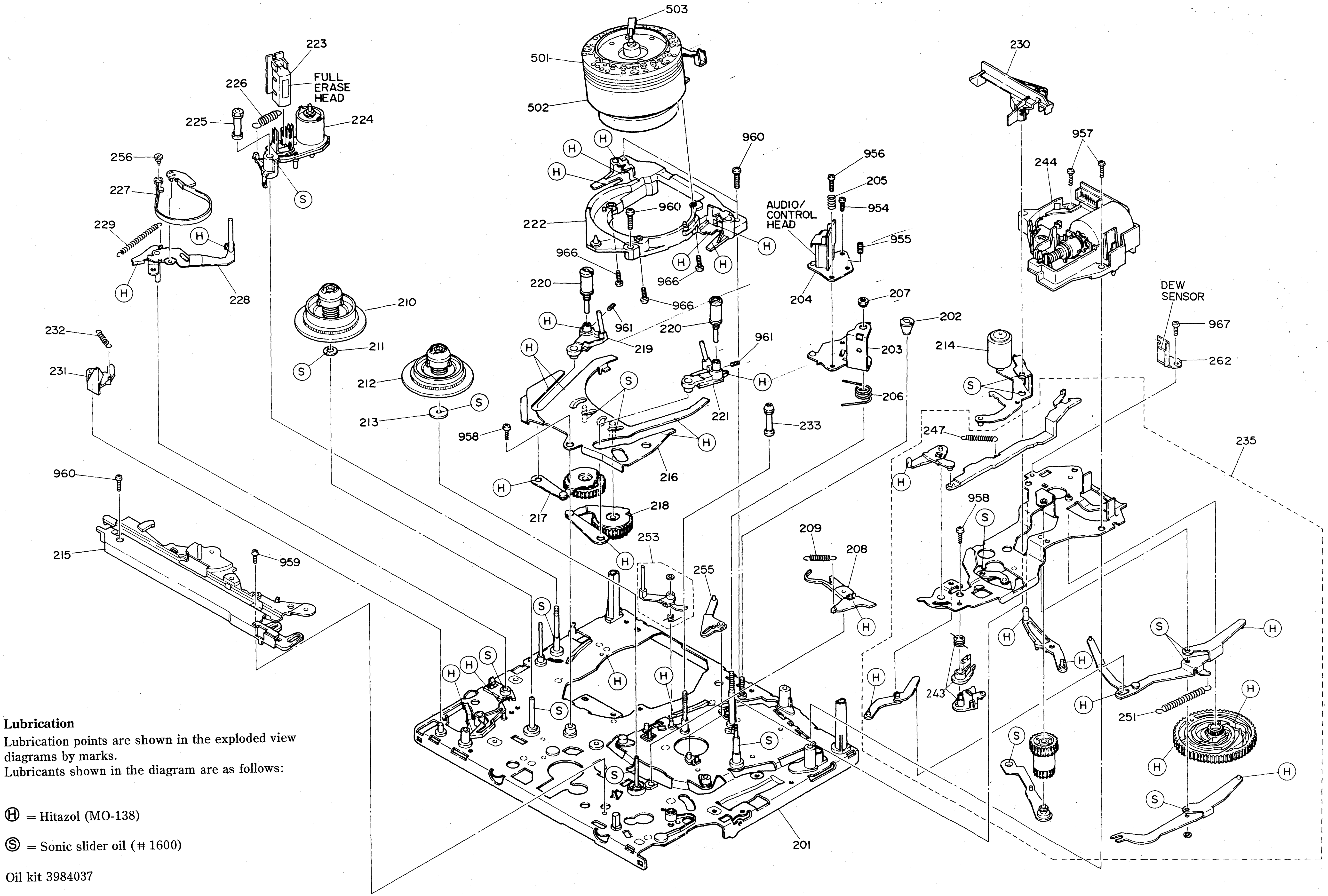
*Position no. 200 (part no. 8422066) is a tape-deck for service matters of which the following parts are left out:

pos. no. 244 Holder w/motor f/threading in/out

pos. no. 501 Tape head, video head, complete

With this tape-deck, non-repairable defects, such as parts broken off moulding parts, can be repaired.

Transport mechanism assembly


503
501
502
223
226
FULL ERASE HEAD
225
224
256
227
229
228
230
957
244
960
956
205
954
AUDIO/ CONTROL HEAD
955
222
960
966
966
966
220
204
207
DEW SENSOR
210
232
211
231
212
213
219
961
220
961
221
203
202
214
967
262
206
233
958
216
247
235
960
217
218
958
209
208
253
255
215
959
243
251
201
H
S

Lubrication

Lubrication points are shown in the exploded view diagrams by marks.
Lubricants shown in the diagram are as follows:

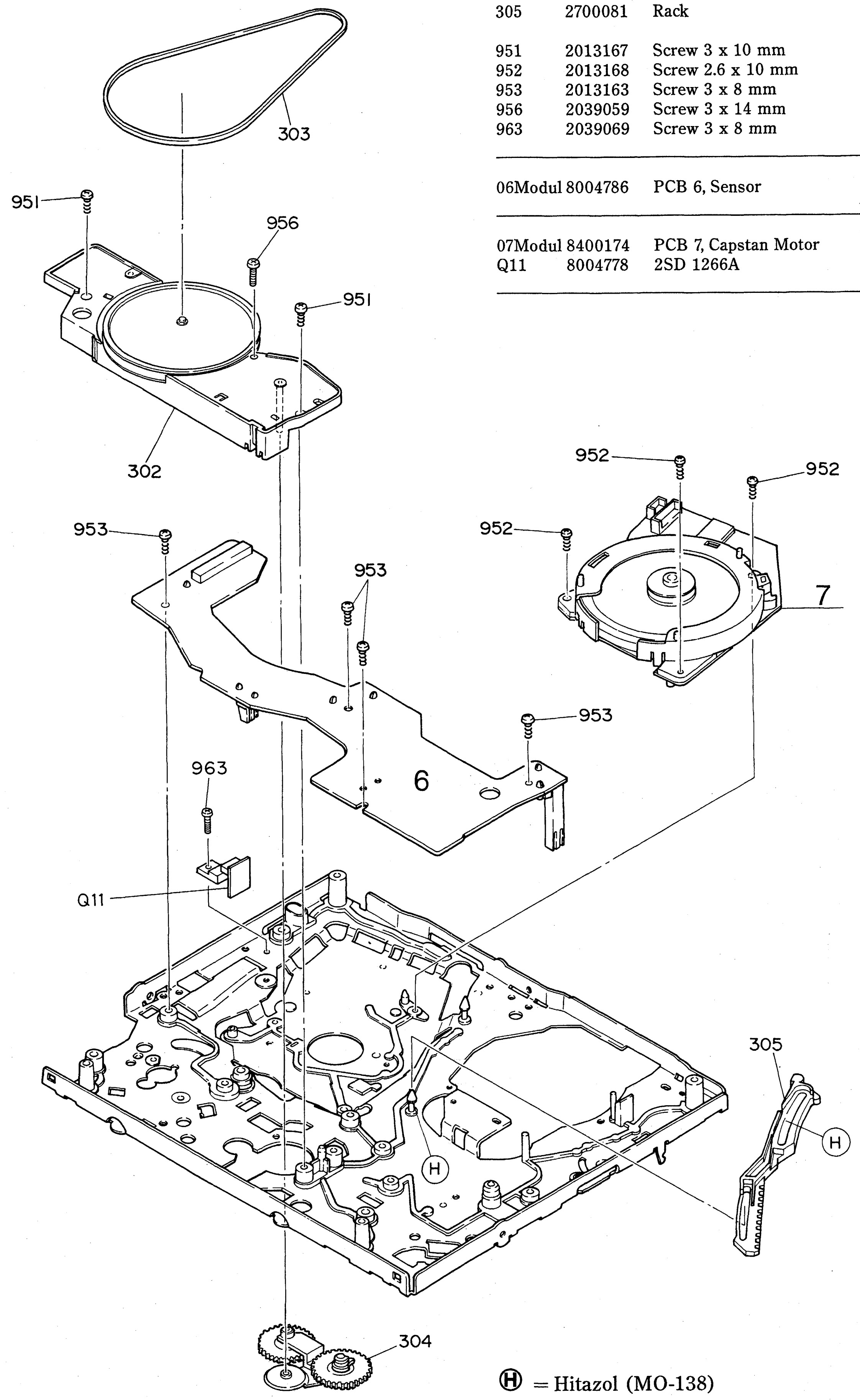
Ⓗ = Hitazol (MO-138)

Ⓢ = Sonic slider oil (# 1600)

Oil kit 3984037

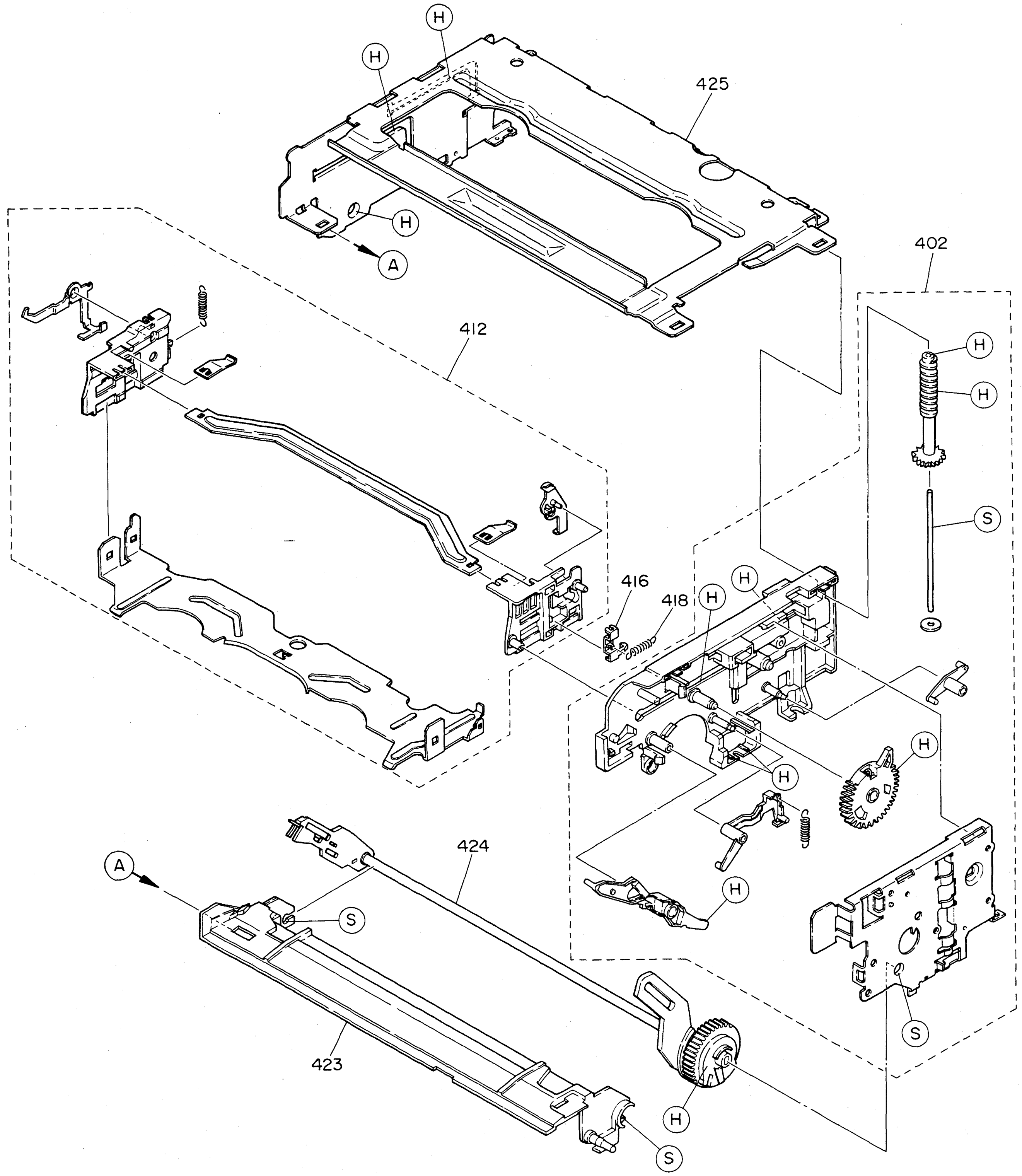
Bottom side mechanism assembly

302	2755035	Gear, complete
303	2732086	Belt
304	2794143	Gear wheels
305	2700081	Rack
951	2013167	Screw 3 x 10 mm
952	2013168	Screw 2.6 x 10 mm
953	2013163	Screw 3 x 8 mm
956	2039059	Screw 3 x 14 mm
963	2039069	Screw 3 x 8 mm
06Modul	8004786	PCB 6, Sensor
07Modul	8400174	PCB 7, Capstan Motor
Q11	8004778	2SD 1266A


303
951
956
951
302
952
952
952
953
953
7
953
6
963
Q11
305
H
H
304

Ⓗ = Hitazol (MO-138)

Loading mechanism assembly


H
H
425
H
A
412
402
H
H
S
416
418
H
H
H
H
H
424
A
S
H
423
H
S
S

402	2755036	Gear, complete
412	8054124	Holder f/cassette lift, complete
416	2854141	Arm
418	2810243	Spring
423	3454566	Bottom plate
424	2700082	Gear wheel
425	3112341	Cassette lift

Set of wire bundles f/tape deck 6276196

6PG143 – Cylinder motor
7PG005 – 21PG605
11PG201 – PCB 5
21PG504 – Full erase head
21PG507 – PCB 5
21PG604 – CTL head
21PG605 – 7PG005
21PG902 – PG002 (loading motor)

Set of wire bundles f/power supply 6276197

1PG1001 – 12PG2915
11PG1401 – 62PG2912
12PG2915 – 1PG1001
12PG2954 – PCB 61
21PG602 – 61PG855
21PG1651 – 61PG859
24PG3503 – 61PG853
61PG853 – 24PG3503
61PG855 – 21PG602
61PG859 – 21PG1651
62PG2912 – 11PG1401
62PG2957 – PCB 61

Set of wire bundles f/PCB 11 & PCB 41 6276198

1PG1002 – 1PG1403
11PG202 – 21PG904
11PG205 – 21PG607
11PG1403 – 1PG1002
11PG1404 – 21PG905
11PG1501 – 21PG513
11PG1505 – 24PG3501
11PG1506 – 24PG3502
11PG1801 – 21PG514
21PG513 – 11PG1501
21PG514 – 11PG1801
21PG607 – 11PG205
21PG904 – 11PG202
21PG905 – 11PG1404
23PG561 – 41PG707
24PG3501 – 11PG1505
24PG3502 – 11PG1506
41PG707 – 23PG561

Set of wire bundles f/PCB 51 6276199

1PG1003 – 51PG3701
11PG203 – 51PG3702
11PG801 – 51PG3707
11PG1402 – 51PG3704
11PG1405 – 51PG3713
11PG1502 – 51PG3711
11PG1504 – 51PG3712
21PG511 – 51PG3703
21PG512 – 51PG3709
21PG515 – 51PG3708
21PG516 – 51PG3710
21PG903 – 51PG3706
51PG3701 – 1PG1003
51PG3702 – 11PG203
51PG3703 – 21PG511
51PG3704 – 11PG1402
51PG3706 – 21PG903
51PG3707 – 11PG801
51PG3708 – 21PG515
51PG3709 – 21PG512
51PG3710 – 21PG516
51PG3711 – 11PG1502
51PG3712 – 11PG1504
51PG3713 – 11PG1405

Wire bundle 6276091

11PG1508 – 31PG1510

Wire bundle 6276126

6PG141 – 21PG901

Owner's Manuals

3504392	Danish
3504393	Swedish
3504394	Finnish
3504395	English
3504396	German
3504397	Dutch
3504398	French
3504399	Italian
3504400	Spanish

Packing

3397710	Foam packing, front
3397711	Foam packing, back
3390391	Foam foil
3392137	Packing for A/V 21-pin cable
3392090	Outer carton

Accessories

6271134	Aerial cable
6270493	A/V cable 21-pin 1.5 m
8004770	VPS unit
8003396	Sound converter 6.5 MHz
8003400	Sound converter 6.0 MHz

Stands

8930845	Stand 2800 – white
8930776	VX shelf
8930846	Stand 2800 – grey metallic
8930776	VX shelf
8930856	Stand 3000 – grey metallic
8930776	VX shelf
8930766	Stand 5000 – grey metallic
8930776	VX shelf
8930816	Motorized Stand 5000 – grey metallic
8930776	VX shelf

Beolink 1000

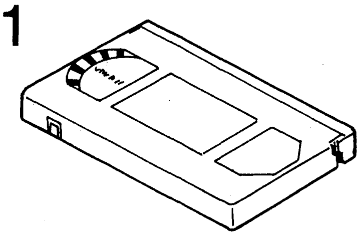
For remote control Beolink 1000, see the service manual "MASTER CONTROL LINK", no. 3538711.

IR Sensor

For IR sensor (no. 8915500), see the service manual "ACCESSORIES 1", no. 3538599 (Master Control Link 2C). The only special part is the 3.5 mm jack, no. 7220382.

SERVICING JIGS AND TOOLS

1



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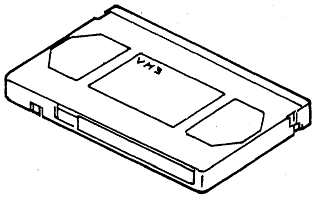

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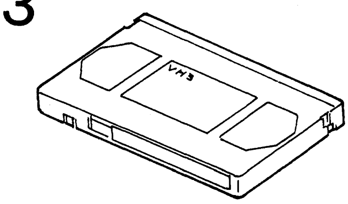

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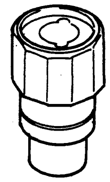

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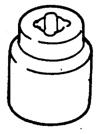

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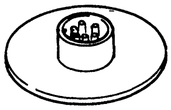

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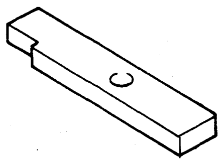

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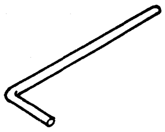

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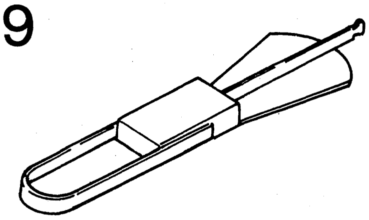
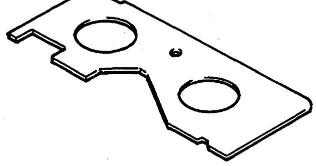


10



Servicing Tools

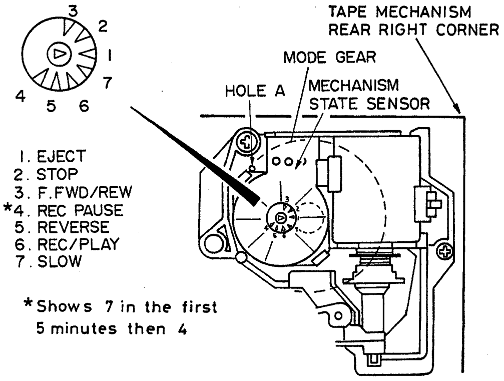
001	6780094	Back tension meter
002	6780093	Alignment tape (PAL)
003	6780096	FM audio alignment cassette
004	3621027	Torque gauge
005	3014064	Torque gauge adaptor
006	3621026	Dummy reel
007	3621025	Reel disk height jig
008	3040008	1.5 mm hexagonal wrench
009	3621000	Fan type tension gauge
010	2576171	Height reference plate
	3984037	Oil kit
	3627000	Video head cleaner kit

MEKANISKE JUSTERINGER

MEKANISK STATUS-OMSKIFTER (MECHANISM STATE SENSOR)

Formål: At detektere den mekaniske status korrekt og forebygge fejlfunktioner.

Løbeværket skal være i eject-funktion.


3
2
1
7
4
5
6
1. EJECT
2. STOP
3. F.FWD/REW
*4. REC PAUSE
5. REVERSE
6. REC/PLAY
7. SLOW
*Shows 7 in the first 5 minutes then 4
TAPE MECHANISM REAR RIGHT CORNER
MODE GEAR
HOLE A
MECHANISM STATE SENSOR

1. **Sørg for at pilen på den mekaniske status-omskifters midteraksel peger mod den mekaniske stillingsindikators pil nr. 1. Sørg også for at hullet (A) ved siden af den mekaniske status-omskifter og hullet i funktionsgearet (mode gear) er ud for hinanden.**
2. **Hvis ovennævnte justeringer ikke er opnået, juster som følger:**

1) Afmonter den mekaniske status-omskifter/ind-/udsløjfningsmotor.
2) Flyt funktionsgearet for at bringe hullet (A) på linie med hullet i vinklen nedenunder.
3) Drej gearet bag på af den mekaniske status-omskifter, så pilen på omskifterens midteraksel peger mod den mekaniske stillingsindikators pil nr. 1.
4) Monter den mekaniske status-omskifter/ind-/udsløjfningsmotor i den tilstand den er i i punkt 3.

3. **Læg et tomt bånd i og udfør forskellige betjeninger, for at sikre at ind-/udkørslen af kassetten samt ind-/udsløjfningen udføres korrekt.**

BÅNDTRANSPORTSYSTEM

Båndtransportsystemet er vejen fra afviklespolen, forbi videohovederne til opsamlespolen. Transportsystemets dele, især de dele, som kommer i direkte kontakt med båndet, bør holdes rene uden ridser, støv, olie, osv.

Båndtransportsystemet justeres fra fabrikken. Efter at have udskiftet dele i transportsystemet er det derfor tilstrækkeligt at justere de nye dele korrekt, for at sikre at transportsystemet fungerer korrekt.

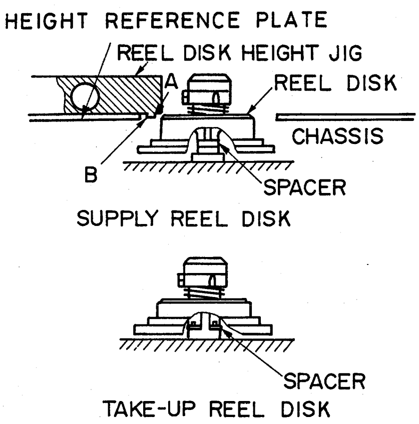
1. Højde på spoletallerken

Formål: at indstille kassettespolerne til den specificerede højde, og dermed at bestemme højden på båndet.

Fjern mekanismen for kassetteindkørsel.

1) Monter højdereferencepladen og placer spoletallerkenens højdeværktøj ovenpå.
2) Højden på spoletallerkenens øverste kant skal ligge mellem niveauerne A og B på spoletallerkenens højdeværktøj.

⇨


HEIGHT REFERENCE PLATE
REEL DISK HEIGHT JIG
A
REEL DISK
CHASSIS
B
SPACER
SUPPLY REEL DISK
SPACER
TAKE-UP REEL DISK

3) Hvis tallerkenens højde ikke er mellem niveauerne A og B på værktøjet, erstattes afstandsstykkerne (0,5 mm tykkelse) under spoletallerkenen, eller de justeres.

BEMÆRK! Hvis friktionsarmen (tension arm) og friktionsbåndet (tension band) afmonteres, så sørg for at justere stillingen på friktionsstangen (tension pole) og friktionen, efter montering af friktionsarmen og friktionsbåndet.

2. Friktionsarmens (tension pole) stilling og friktion

Formål: at gøre båndets friktion konstant for at stabilisere kontakten mellem videohovederne og båndet.

Fjern mekanismen for kassetteindkørsel.

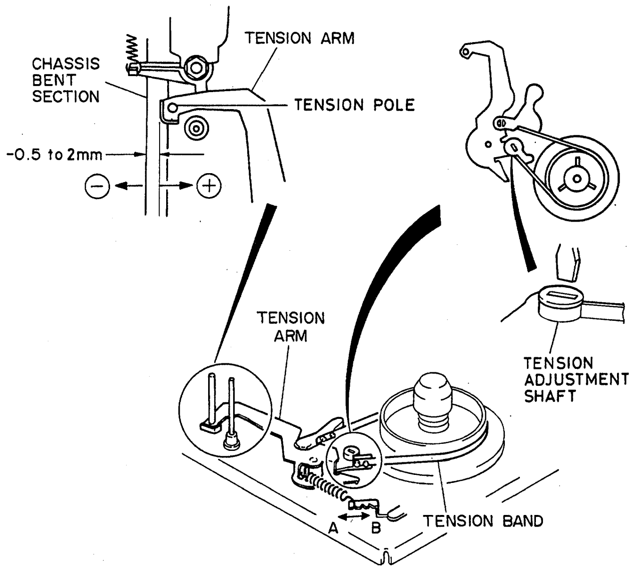
1) Klæb et stykke papir over båndstopfølerens lysdiode (midt i løbeværket). Der må ikke komme lys udefra (f.eks. fra en arbejdslampe).

2) Uden at lægge en kassette i trykkes PLAY-knappen, for at få apparatet i indsløjfet stilling.

3) Drej akslen for friktionsjustering, så enden af friktionsarmen er mellem 0,5 og 2 mm fra ydersiden af det bøjede chassis.

4) Efter justeringen trykkes EJECT- og PLAY-knapperne, for at få apparatet til at sløjfe ud og ind uden kassette. Kontroller justeringen.

5) Læg et friktionsbånd i og afspil det.
Referenceværdi: 34 – 44 g/cm.
Hvis udlæsningen er højere end referencen, så flyt fjederen i retning (A).
Hvis udlæsningen er lavere end referencen, så flyt fjederen i retning (B).



BEMÆRK! Hvis friktionsstillingen ændres betragteligt (mere end 6 g/cm), kontrolleres friktionsstangens (tension pole) stilling igen. Hvis den har flyttet sig, justeres friktionsstangens stilling igen.

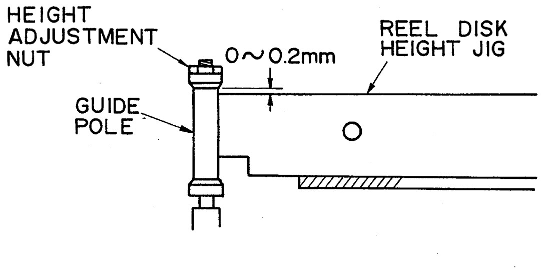
3. Højde på styrepind (guide pole) for afvikling og opsamling

Formål: at regulere båndhøjden.

Fjern mekanismen for kassetteindkørsel.

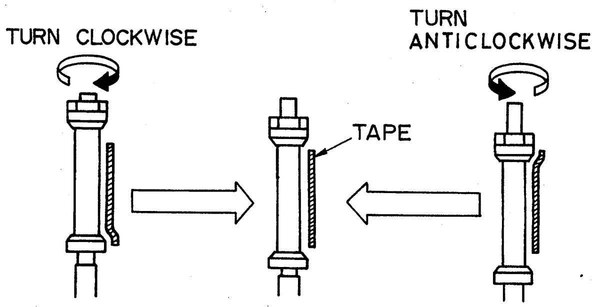
1) Monter højdereferencepladen og placer spoletallerkenens højdeværktøj ovenpå.

2) Juster afstanden mellem det nederste af styrepindens øverste flange og det øverste af spoletallerkenens højdeværktøj til mellem 0 og 0,2 mm.



3) Læg et tomt bånd i. Afspil det og sørg for, at båndet ikke kører hen over styrepindenes øverste eller nederste flanger.

4) Hvis båndet kører over en af flangerne, justeres styrepindens højde som vist på tegningen.


TURN CLOCKWISE
TURN ANTICLOCKWISE
TAPE

4. Højde på styrerulle (guide roller) for afvikling og opsamling (grovjustering)

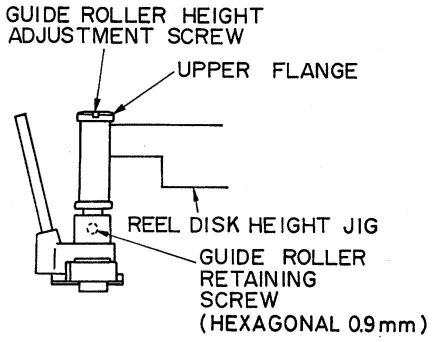
Formål: at regulere højden på båndet, så det nederste af båndet løber langs cylinderens båndstyrelinie.

Fjern mekanismen for kassetteindkørsel.

1) Monter højdereferencepladen og placer spoletallerkenens højdeværktøj ovenpå.

2) Løsn holdeskruen på styrerullen (guide roller retaining screw) (kun så meget at højdejusteringen for styrerullen ikke ændres under ind-/udsløjfning eller afspilning).

3) Bring bunden af styrerullens øverste flange på linie med toppen af spoletallerkenens højdeværktøj.


GUIDE ROLLER HEIGHT ADJUSTMENT SCREW
UPPER FLANGE
REEL DISK HEIGHT JIG
GUIDE ROLLER RETAINING SCREW (HEXAGONAL 0.9mm)

Finjustering

1) Monter mekanismen for kassetteindkørsel.

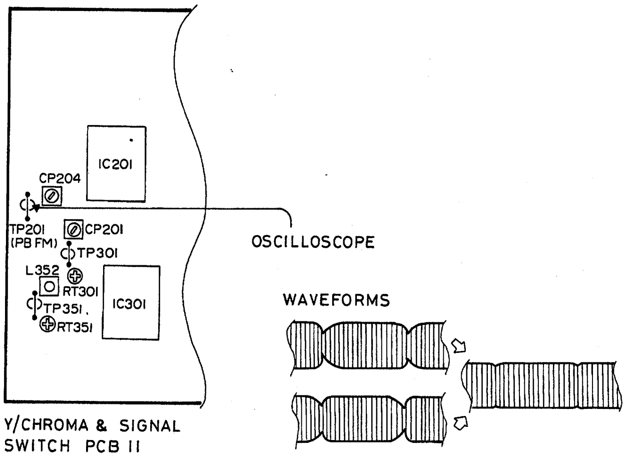
2) Slut et oscilloskop til TP201 på PCB11.

3) Læg et justerbånd, bestill.nr. 6780093, i og afspil det.

4) Sæt tracking til maximum FM (se side 7-10).

5) Drej styrerullens højdejusteringsskrue en smule for at udjævne FM-kurveformen.

6) Stram styrerullens holdeskrue.


IC201
CP204
TP201 (PB FM)
CP201
TP301
L352
RT301
TP351
IC301
RT351
OSCILLOSCOPE
WAVEFORMS
Y/CHROMA & SIGNAL SWITCH PCB II

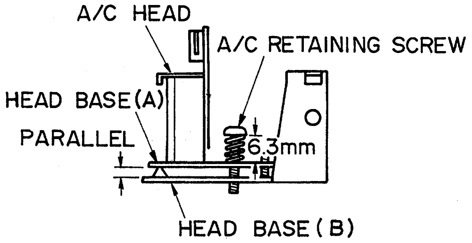
5. Audio/kontrolhovede (A/C) (grovjustering)

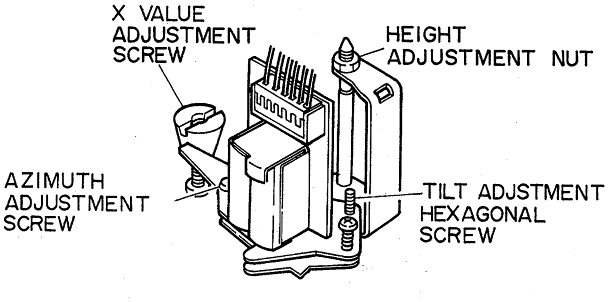
Formål: at holde kontakten mellem båndet og hovedet, så det specificerede spor optages og afspilles.

Fjern mekanismen for kassetteindkørsel.

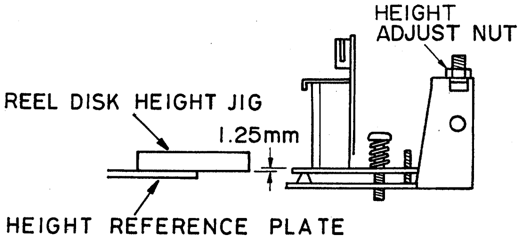
1) Juster A/C-holdeskruen, så det øverste af fjederen på skruen er 6,3 mm over det øverste af A/C-hovedets holdeplade (A).

2) Juster tilt-justeringsskruen (hexagonal 1,5 mm) og azimut-justeringsskruen for at gøre A/C-hovedernes holdeplader (A) og (B) parallelle.


A/C HEAD
A/C RETAINING SCREW
HEAD BASE (A)
PARALLEL
6.3mm
HEAD BASE (B)


X VALUE ADJUSTMENT SCREW
HEIGHT ADJUSTMENT NUT
AZIMUTH ADJUSTMENT SCREW
TILT ADJSTMENT HEXAGONAL SCREW

3) Monter højdereferencepladen. Placer spoletallerkenens højdeværktøj ovenpå, og skub den mod holdepladen (A).

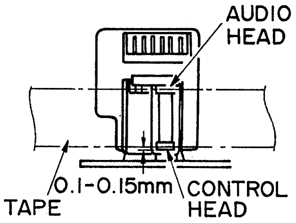

HEIGHT ADJUST NUT
REEL DISK HEIGHT JIG
1.25mm
HEIGHT REFERENCE PLATE

4) Juster højde-justeringsmøtrikken til en afstand på ca. 1,25 mm fra det øverste af holdepladen (A) til det øverste af højdereferencepladen.

5) Fjern justeringsværktøjet og monter mekanismen for kassetteindkørsel.

6) Læg et tomt bånd i og afspil det.

7) Kontroller om båndet krøller eller kører over A/C-hovedet. Hvis det er tilfældet, justeres tilt-justeringsskruen, azimut-justeringsskruen og højde-justeringsmøtrikken igen.
Højden på A/C-hovedet er ideel, når båndet er mellem 0,1 og 0,15 mm fra den nederste kant på kontrolhovedets kerne.

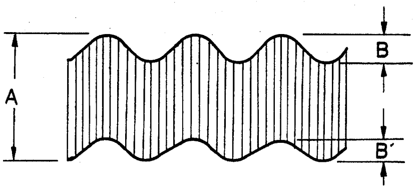

AUDIO HEAD
0.1-0.15mm
TAPE
CONTROL HEAD

Finjustering

1) Slut et oscilloskop til ben 1 (højre ud) og ben 3 (venstre ud) på A/V-stikket.

2) Læg et justerbånd, bestill.nr. 6780093, i og afspil 6kHz delen.

3) Juster azimut-justeringsskruen, højde-justeringsmøtrikken og tilt-justeringsskruen lidt, for at øge audio til maximum og gøre kurveformen så flad som muligt (minimum udsving).



A : Maximum BB' : Minimum

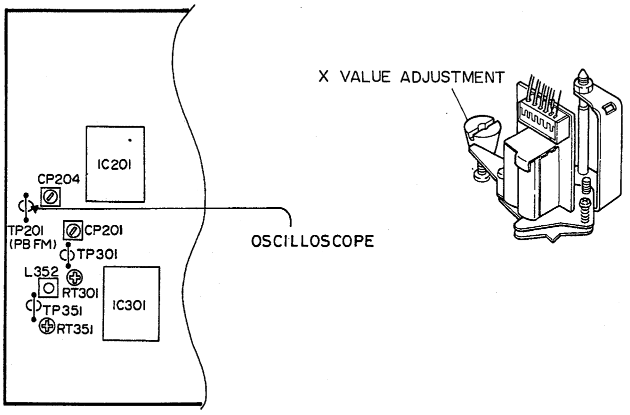
6. X-værdi

Formål: at opnå kompatibilitet med andre videobåndoptagere.

BEMÆRK! Udfør altid tracking preset-justeringen (se side 5-8) før X-værdijusteringen.

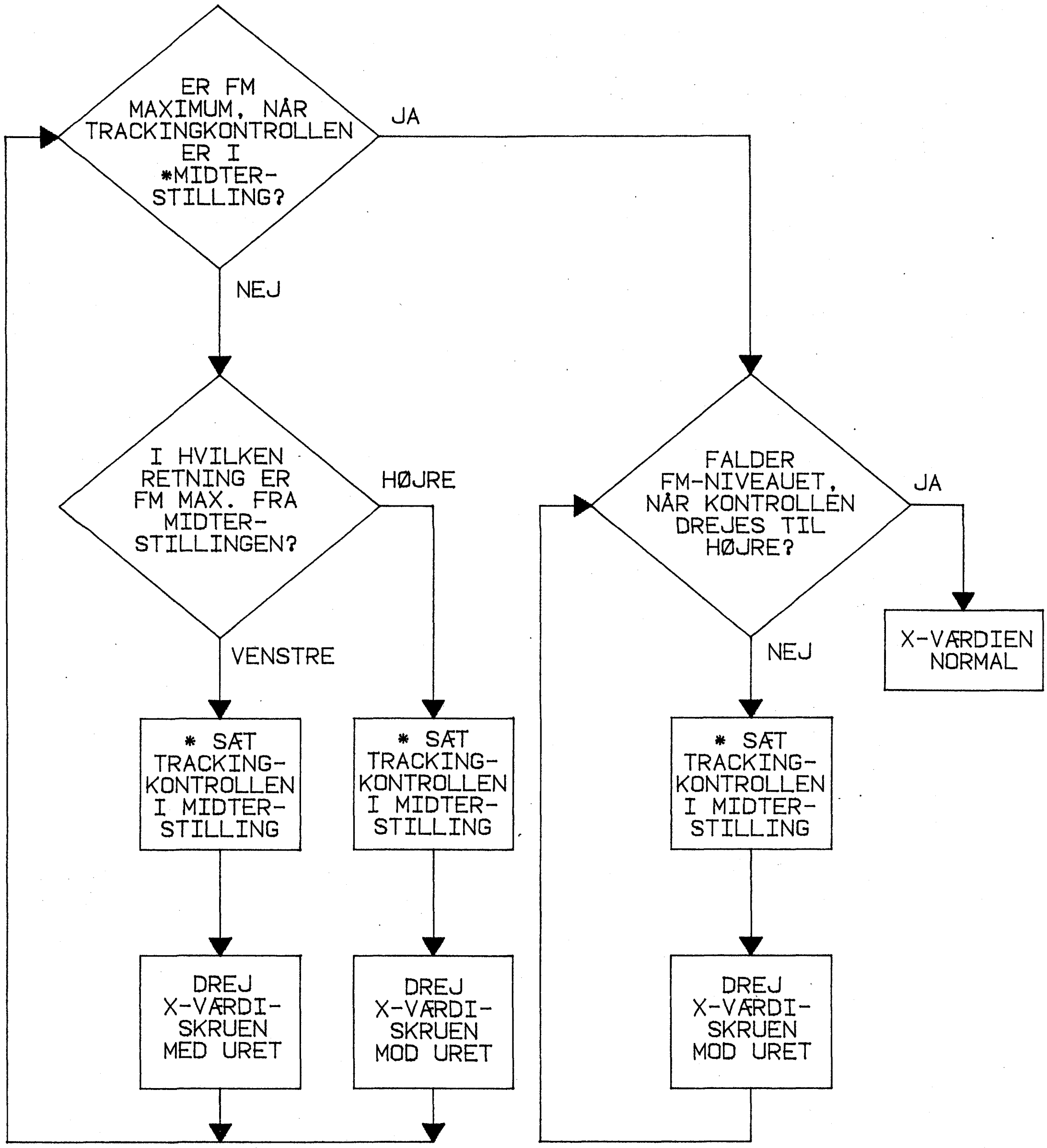
1) Slut et oscilloskop til TP201 på PCB11.

2) Læg et justerbånd, bestill.nr. 6780093, i og afspil trappetrinsdelen.


X VALUE ADJUSTMENT
IC201
CP204
TP201 (PB FM)
CP201
TP301
L352
RT301
TP351
RT351
IC301
OSCILLOSCOPE

Y/CHROMA & SIGNAL SWITCH PCB 11

3) Juster X-værdiskruen til max. FM, drej derefter skruen med uret, indtil FM-niveauet netop begynder at falde.

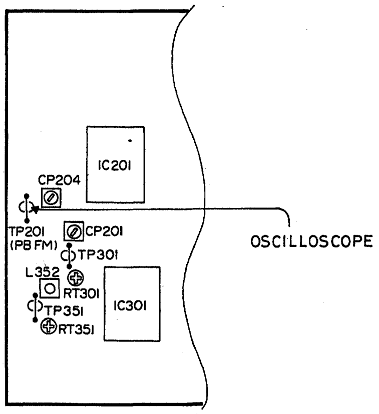

ER FM MAXIMUM, NÅR TRACKINGKONTROLLEN ER I *MIDTERSTILLING?
JA
NEJ
I HVILKEN RETNING ER FM MAX. FRA MIDTERSTILLINGEN?
HØJRE
VENSTRE
* SÆT TRACKINGKONTROLLEN I MIDTERSTILLING
* SÆT TRACKINGKONTROLLEN I MIDTERSTILLING
DREJ X-VÆRDISKRUEN MED URET
DREJ X-VÆRDISKRUEN MOD URET
FALDER FM-NIVEAUET, NÅR KONTROLLEN DREJES TIL HØJRE?
JA
NEJ
X-VÆRDIEN NORMAL
* SÆT TRACKINGKONTROLLEN I MIDTERSTILLING
DREJ X-VÆRDISKRUEN MOD URET

* TRACKINGKONTROLLEN CENTRERES AUTOMATISK, NÅR KASSETTEN KØRES UD.

7. Justeringer efter udskiftning af cylinder (videohoveder)

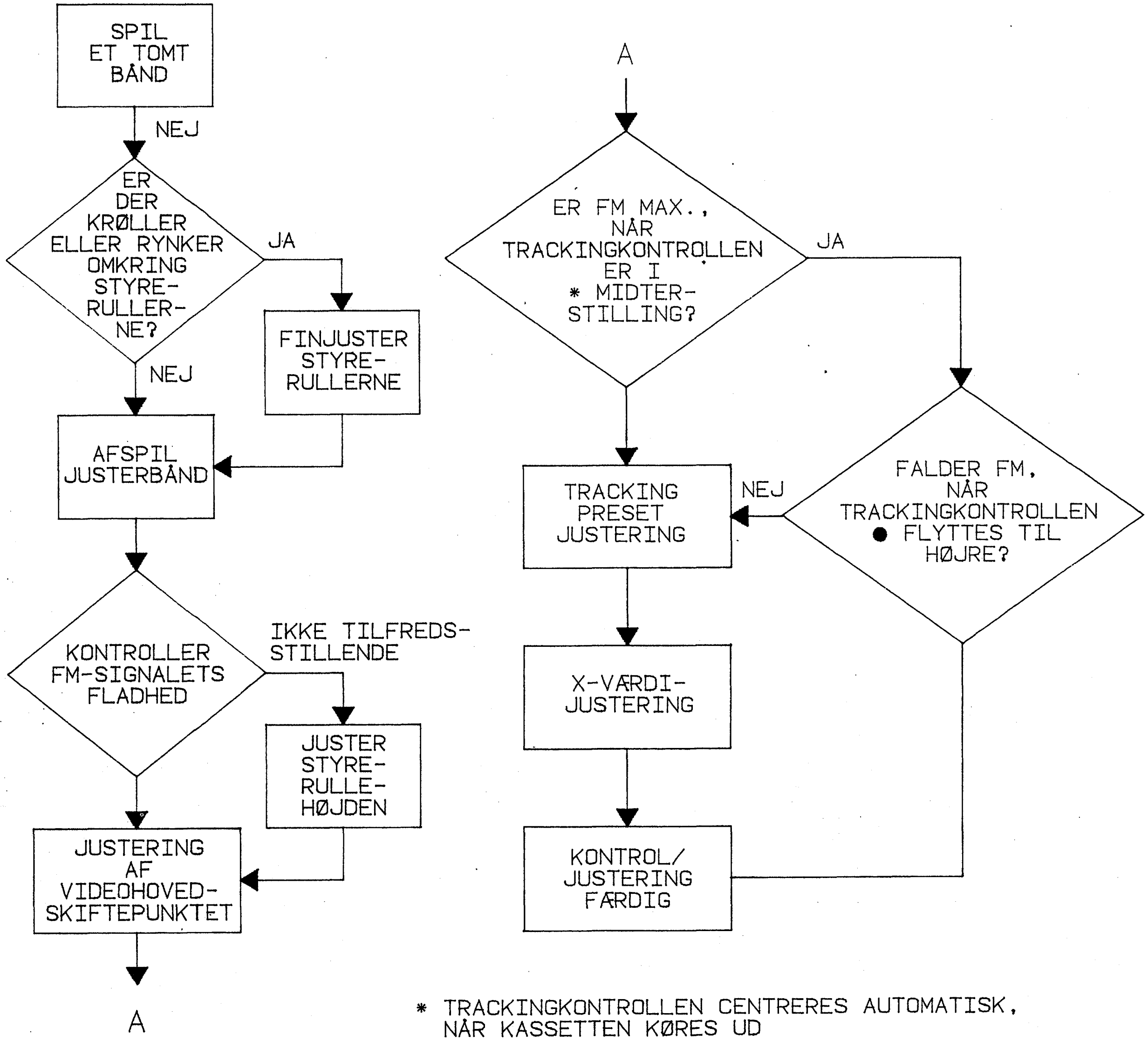
Formål: at undertrykke, at højden forskydes i forhold til styrerullen og at minimere X-værdien efter udskiftning af cylinderen.

1) Slut et oscilloskop til TP201 på PCB 11.


IC201
CP204
TP201
(PB FM)
CP201
TP301
L352
RT301
TP351
IC301
RT351
OSCILLOSCOPE

Y/CHROMA & SIGNAL
SWITCH PCB 11

KONTROL/JUSTERINGSPROCEDURE


SPIL ET TOMT BÅND
NEJ
ER DER KRØLLER ELLER RYNKER OMKRING STYRE-RULLER-NE?
JA
FINJUSTER STYRE-RULLERNE
NEJ
AFSPIL JUSTERBÅND
KONTROLLER FM-SIGNALETS FLADHED
IKKE TILFREDS-STILLENDE
JUSTER STYRE-RULLE-HØJDEN
JUSTERING AF VIDEOHOVED-SKIFTEPUNKTET
A
A
ER FM MAX., NÅR TRACKINGKONTROLLEN ER I * MIDTER-STILLING?
JA
FALDER FM, NÅR TRACKINGKONTROLLEN ● FLYTTES TIL HØJRE?
NEJ
TRACKING PRESET JUSTERING
X-VÆRDI-JUSTERING
KONTROL/ JUSTERING FÆRDIG

* TRACKINGKONTROLLEN CENTRERES AUTOMATISK, NÅR KASSETTEN KØRES UD

● SE SIDE 7-10 ANG. INDSTILLING AF TRACKINGKONTROL

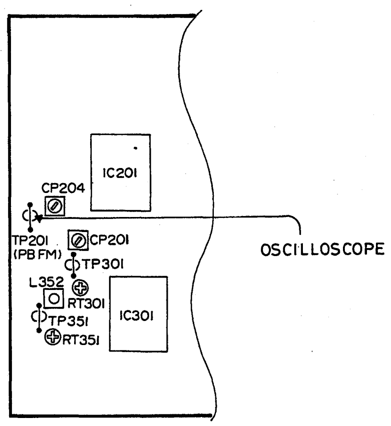
VIDEOHOVEDSKIFTEPUNKT, SIDE 5-8

TRACKING PRESET, SIDE 5-8

Kontrol af FM-niveauets fladhed og udsving.

1) Slut et oscilloskop til TP201 på PCB11.

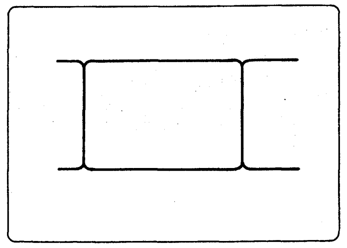
2) Læg justerbånd, bestill.nr. 6780093, i og spil trappetrinsdelen.


IC201
CP204
TP201
(PB FM)
CP201
TP301
L352
RT301
TP351
RT351
IC301
OSCILLOSCOPE

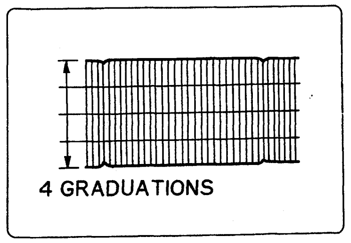
Y/CHROMA & SIGNAL SWITCH PCB II

Se side 7-10 ang. indstilling af trackingkontrol.

3) Sæt trackingkontrol til maximum FM-niveau.



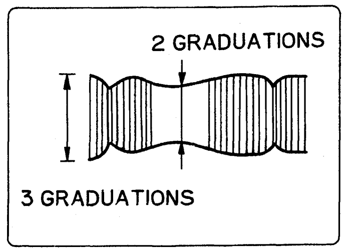
4) Indstil oscilloskopet indtiltil FM-niveauet fylder 4 inddelinger på skærmen.


4 GRADUATIONS

5) Juster trackingkontrollen, indtil amplituden på FM-niveauet fylder 3 inddelinger.

6) Sørg for at min. amplitude er mere end 2 inddelinger.

7) Sørg for at niveau-udsvingene mellem max. og min. amplitude er mindre en 13%.


2 GRADUATIONS
3 GRADUATIONS

8. Kontrol af friktion/moment

Formål: Kontroller disse hvis båndtransporten er ujævn eller båndhastigheden unormal.

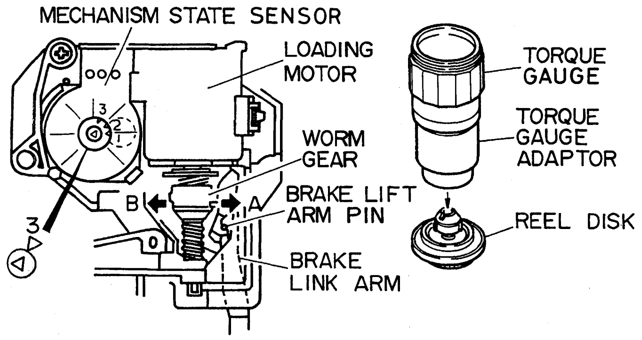
Fjern mekanismen for kassetteindkørsel.

1) Dæk de to båndstopfølere (en i hver side af løbeværket) med papirstykker. Nu kan løbeværket køre uden kassette.

2) Udfør kontrollen med en momentmåler bestill.nr. 3621027 og adaptor for momentmåler bestill.nr. 3014064.

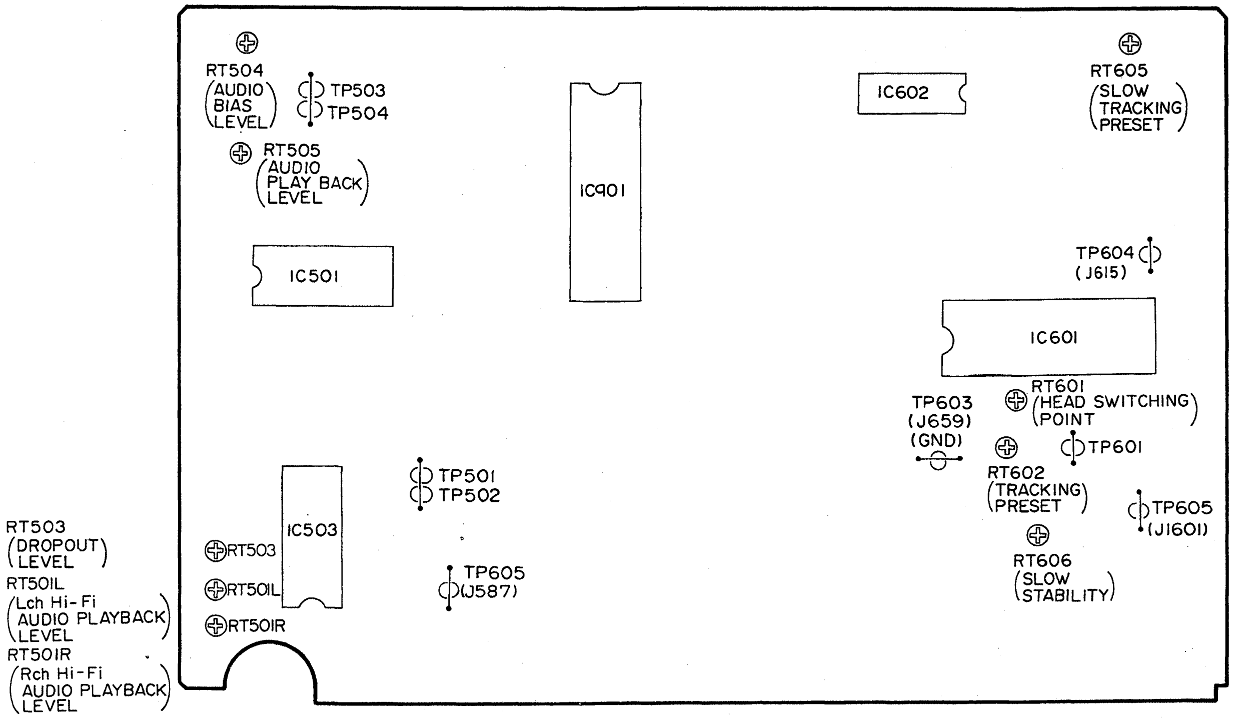
Emne	Stilling for videobåndoptager	Målt på spole	Værdi
Moment for primærbremse	Stop (Bemærk-1)	Afvikle- og opsamlespole	170 g/cm eller mere
Moment for udsløjfning	Sløjfer ud	Afviklespole	90 ~ 230 g/cm
Moment for fremadspoling	Spoler frem	Opsamlespole	400 g/cm eller mere
Moment for tilbagespoling	Spoler tilbage	Afviklespole	400 g/cm eller mere
Moment for opsamling	Spiller	Opsamlespole	80 ~ 170 g/cm
Moment for bagfriktion	Spoler frem	Adviklespole	4 ~ 25 g/cm
(modhold)	Spoler tilbage	Opsamlespole	

BEMÆRK-1: Drej snekkehjulet i retning af pilen (A) i stop-stilling. Flyt derefter viseren på den mekaniske status-omskifter (mechanism state switch) til »3« for at sætte primærbremsen til afviklespoletallerkenen. Drej derefter snekkehjulet i retning af pilen (B) så bremse-forbindelsesarmen (brake link arm) frigøres fra stiften for bremseløftearmen (brake lift arm) (sæt spole-drivgearet (mellemhjulet) i midterstilling).

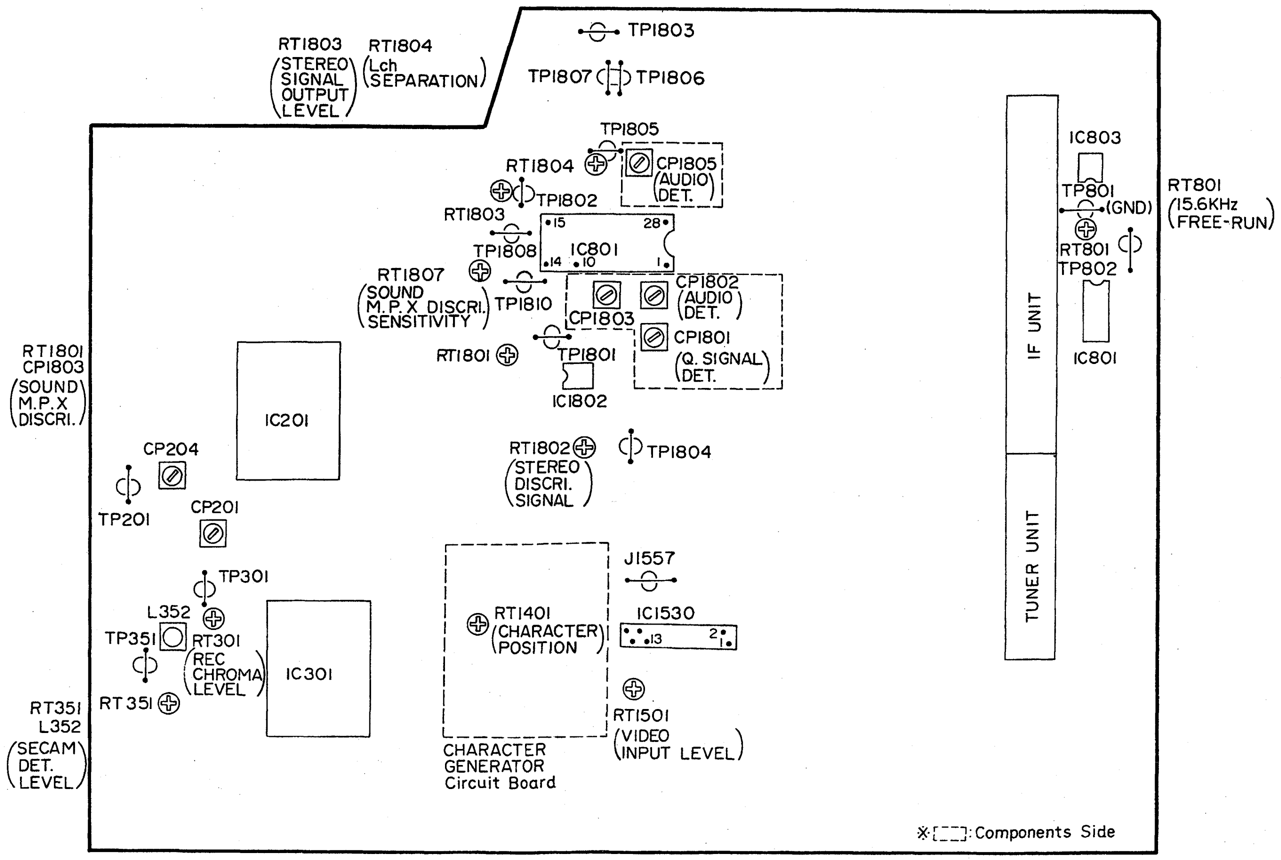

MECHANISM STATE SENSOR
LOADING MOTOR
WORM GEAR
BRAKE LIFT ARM PIN
BRAKE LINK ARM
B
A
3
2
1
TORQUE GAUGE
TORQUE GAUGE ADAPTOR
REEL DISK

ELEKTRISKE JUSTERINGER

Betjening:
Mange af videobåndoptagerens betjeningsfunktioner kan kun foretages med Beolink 1000 fjernbetjeningen.
For at videobåndoptageren kan modtage fjernbetjeningssignalerne, kan en IR-føler (bestill.nr. 8915500), som forbindes til REMOTE CONTROL-stikdåsen, anvendes.
En kort betjeningsvejledning findes på side 7-10.


RT504 (AUDIO BIAS LEVEL)
TP503
TP504
RT505 (AUDIO PLAY BACK LEVEL)
IC901
IC602
RT605 (SLOW TRACKING PRESET)
IC501
TP604 (J615)
IC601
TP603 (J659) (GND)
RT601 (HEAD SWITCHING POINT)
TP601
RT602 (TRACKING PRESET)
TP605 (J1601)
RT606 (SLOW STABILITY)
TP501
TP502
TP605 (J587)
IC503
RT503
RT501L
RT501R
RT503 (DROPOUT LEVEL)
RT501L (Lch Hi-Fi AUDIO PLAYBACK LEVEL)
RT501R (Rch Hi-Fi AUDIO PLAYBACK LEVEL)

MAIN (SERVO, Hi Fi AUDIO & SYSTEM CONTROL) PCB 21


RT1803 (STEREO SIGNAL OUTPUT LEVEL)
RT1804 (Lch SEPARATION)
TP1803
TP1807
TP1806
TP1805
RT1804
CP1805 (AUDIO DET.)
TP1802
RT1803
TP1808
IC801
RT1807
(SOUND M.P.X DISCRI. SENSITIVITY)
TP1810
CP1802 (AUDIO DET.)
CP1803
CP1801 (Q. SIGNAL DET.)
RT1801
TP1801
IC1802
IC803
TP801
(GND)
RT801
TP802
IC801
RT801 (15.6KHz FREE-RUN)
IF UNIT
TUNER UNIT
RT1801 CP1803 (SOUND M.P.X DISCRI.)
IC201
CP204
TP201
CP201
RT1802 (STEREO DISCRI. SIGNAL)
TP1804
TP301
L352
TP351
RT301 (REC CHROMA LEVEL)
IC301
RT351
RT351 L352 (SECAM DET. LEVEL)
RT1401 (CHARACTER POSITION)
J1557
IC1530
RT1501 (VIDEO INPUT LEVEL)
CHARACTER GENERATOR Circuit Board
※[ ]: Components Side

Y/CHROMA & SIGNAL SWITCH PCB 11

1. RF KREDSLØB

1. Video-udgangsniveau

1) Slut et TV til RF OUT-stikdåsen.

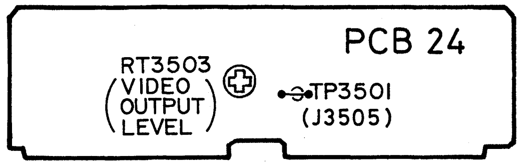
2) Slut en farvebjælkegenerator til ben 20 (video ind) på A/V-stikket.

3) Slut et oscilloskop til TP3501 (J3505) på PCB24.

4) Sæt videobåndoptageren i stop-stilling.

5) Tryk på SOURCE-knappen foran på apparatet, indtil AUX lyser i displayet.

6) Juster RT3503 på PCB24, indtil video-udgangsniveauet på TP3501 er 2Vpp.


PCB 24
RT3503 (VIDEO OUTPUT LEVEL)
TP3501 (J3505)

2. SERVO KREDSLØB

1. Video-hovedskiftepunkt

1) Slut CH1 på et oscilloskop til A/V-stikkets ben 19 (video ud) og CH2 til TP601 (SW25Hz) på PCB 21. Trig på CH1.

2) Læg justerbånd bestill.nr. 6780093 i, og afspil farvebjælkedelen.

3) Juster RT601 på PCB21, så SW25Hz-signalets bagflanke (trigger-punkt) er 6,5 ±0,5 horisontale linier (416 ±32μS) foran videosignalets vertikale synk.

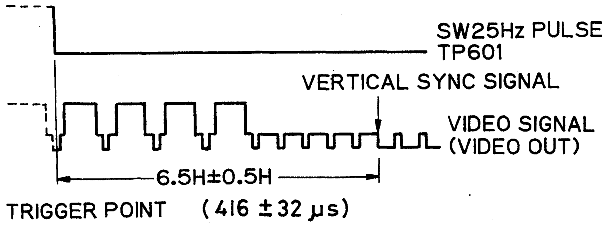
Kontrol af hovedskiftepunkt under optagelse

4. Tilslut et oscilloskop, som i pkt. 1.

5) Slut en generator med et gråskalasignal til antenneindgangen.

6) Læg et tomt bånd i, og lav en optagelse.

7) Kontroller om SW25Hz-signalets bagflanke (trigger-punkt) er 5 til 8 horisontale linier foran videosignalets vertikale synk. Hvis den er mindre end 5 horisontale linier foran, fjernes R692 på PCB21.


SW25Hz PULSE TP601
VERTICAL SYNC SIGNAL
VIDEO SIGNAL (VIDEO OUT)
6.5H±0.5H
TRIGGER POINT (416 ±32 μs)

2. Tracking preset

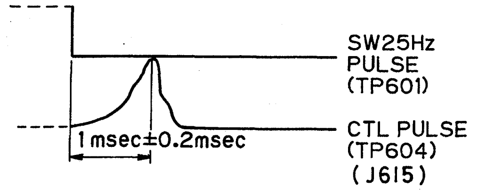
1) Slut CH1 på et oscilloskop til TP601 (SW25Hz) og CH2 til TP604 (CTL-puls) på PCB21. Trig på CH1.

2) Sæt tracking-kontrollen i midterstilling. (Tracking-kontrollen centreres automatisk, når kassetten køres ud).

3) Læg et tomt bånd i, og optag et TV-prøvebillede.

4) Afspil optagelsen.

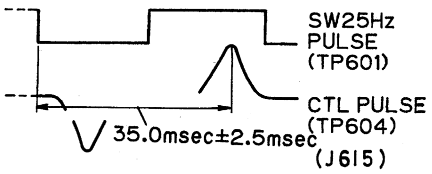
5) Juster RT602 på PCB21, så SW25Hz-signalets bagflanke (trigger-punkt) er 1mS ±0,2mS foran CTL-signalet.


SW25Hz PULSE (TP601)
CTL PULSE (TP604) (J615)
1 msec±0.2msec

3. Langsom tracking preset, langsom stabilitet og vertikal synk.

Følg samme fremgangsmåde som for tracking preset, men foretag afspilning langsomt. (Tryk V.TAPE på Beolink 1000, og når båndet kører tryk da STOP og >>).

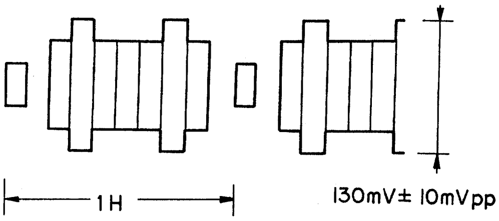
1) Juster RT605 på PCB21 for langsom tracking preset, så SW25Hz-signalets bagflanke (triggerpunkt) er 35mS ±2,5mS foran CTL-signalets spids.
2) Juster RT606 på PCB21 for langsom stabilitet, indtil minimum horisontal jitter under langsom billede.
3) Juster potentiometeret, mærket TAPE STILL PICTURE ADJ. (RT3501 på PCB24) bagest til venstre på videobåndoptageren, for vertikal synk., til minimum vertikal jitter under langsom og still billede (Tryk STOP på Beolink 1000 for at få still billede).


SW25Hz
PULSE
(TP601)
CTL PULSE
(TP604)
(J615)
35.0msec±2.5msec

3. Y/CHROMA KREDSLØB

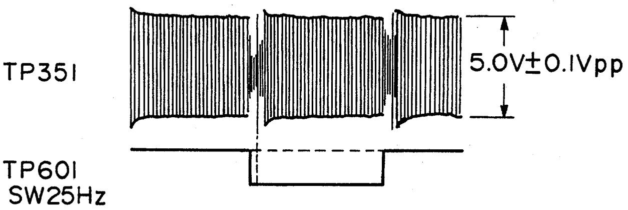
1. Rec. krominansniveau

1) Slut et oscilloskop til TP301 på PCB11.
2) Slut en farvebjælkegenerator til ben 20 (video ind) på A/V-stikket.
3) Sæt videobåndoptageren i stop-stilling.
4) Tryk på SOURCE-knappen på det sekundære betjeningspanel, indtil AUX lyser i displayet.
5) Juster RT301 på PCB11, indtil amplituden er 130mV ±10mVpp.

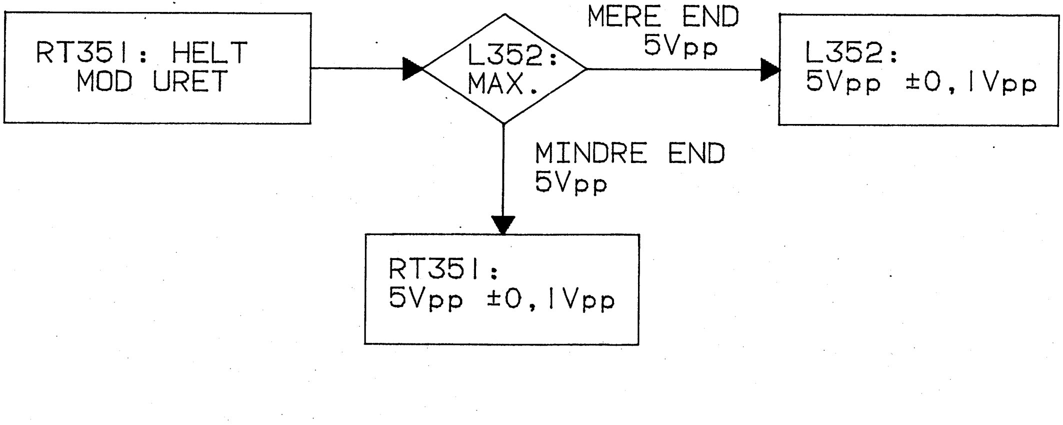

1H
130mV± 10mVpp

2. Secam detekteringsniveau

1) Slut CH1 på et oscilloskop til TP351 på PCB11 og CH2 til TP601 på PCB21.
2) Forbind en Secam B/G farvebjælkegenerator til ben 20 (video ind) på A/V-stikket.
3) Tryk på SOURCE-knappen på det sekundære betjeningspanel, indtil AUX lyser i displayet.
4) Læg et tomt bånd i, og sæt videobåndoptageren i optagestilling.


TP351
5.0V±0.1Vpp
TP601
SW25Hz

PROCEDURE :


RT351 : HELT MOD URET
L352: MAX.
MERE END 5Vpp
L352: 5Vpp ±0, 1Vpp
MINDRE END 5Vpp
RT351 : 5Vpp ±0, 1Vpp

4. AUDIO

1. Hi-Fi audio-afspilningsniveau

1) Slut et LF-voltmeter til ben 1 (højre ud) og ben 3 (venstre ud) på A/V-stikket.

2) Læg et Hi-Fi-justerbånd, bestill.nr. 6780096, i og afspil det.

3) Juster RT501L (venstre) og RT501R (højre) på PCB21, indtil en udlæsning på 1,03V ±0,06V opnås.

Efter at disse justeringer er foretaget, justeres dropout-niveauet.

2. Dropout-niveau

1) Kortslut TP502 på PCB21 til stel.

2) Kortslut J587 på PCB21 til stel.

3) Slut et DC-voltmeter til TP501 på PCB21.

4) Læg et justerbånd, bestill.nr. 6780093, i og afspil.

5) Juster RT503 på PCB21, indtil en udlæsning på 2,5V ±0,1V DC opnås.

6) Fjern kortslutningerne.

3. Audio afspilningsniveau

1) Slut et LF-voltmeter til ben 3 (venstre ud) på A/V-stikket.

2) Læg et justerbånd, bestill.nr. 6780093, i og afspil 1kHz-delen.

3) Juster RT505 på PCB21, indtil en udlæsning på 516mV ±30mV opnås.

4. Audio bias-niveau

1) Slut et LF-voltmeter til TP504 med stel til TP503 på PCB21.

2) Læg et tomt bånd i, og lav en optagelse uden signal.

3) Juster RT504 på PCB21, indtil en udlæsning på 2,3mV ±1mV opnås.

5. MULTIPLEX DEMODULATOR

Bemærk: Sørg for, at RT1801, RT1802, RT1803 og RT1804 på PCB11 er så tæt på deres midterstillinger som muligt.

1. Lyd M.P.X. diskriminatorfølsomhed

1) Sæt videobåndoptageren i stop-stilling. Kobl antennekablet fra og detune videobåndoptageren.

2) Slut en tonegenerator og en frekvenstæller til TP1801 på PCB11, og indstil tonegeneratoren til at afgive 196Hz, 40mV.

3) Slut et DC-voltmeter til TP1810 på PCB11.

4) Juster RT1807 på PCB11, indtil en udlæsning på 6,10V ±0,05V DC opnås.

2. Audio-detektering

1) Slut en stereogenerator til antenneindgangen, og indstil generatoren til tosprog.

2) Slut et oscilloskop til TP1802 på PCB11.

3) Slut en forvrængningsmåler til TP1805 på PCB11.

4) Indstil videobåndoptageren til at modtage signalet.

5) Juster CP1802 og CP1805 på PCB11 til maximum niveau og minimum forvrængning.

3. Q.-signaldetektering

1) Slut en stereogenerator til antenneindgangen, og indstil generatoren til tosprog.

2) Slut et oscilloskop til TP1804 på PCB11.

3) Indstil videobåndoptageren til at modtage signalet.

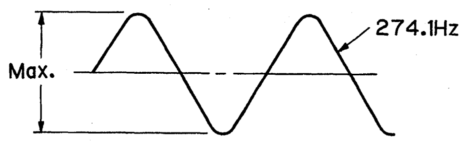
4) Juster CP1801 på PCB11 til maximum.

4. Lyd M.P.X. diskriminatorsignal

1) Slut et oscilloskop til TP1801 på PCB11.

2) Indstil videobåndoptageren til at modtage et tosprogs signal.

3) Juster RT1801 og CP1803 på PCB11 til maximum (274,1Hz).



5. Stereodiskriminatorsignal

1) Slut et oscilloskop til TP1801 på PCB11.

2) Indstil videobåndoptageren til at modtage et stereosignal.

3) Juster RT1802 på PCB11 til maximum (117,5Hz).

6. Stereosignal udgangsniveau

1) Slut et LF-voltmeter til TP1808 på PCB11.

2) Indstil videobåndoptageren til at modtage et stereosignal.

3) Tryk på SOUND-knappen på det sekundære betjeningspanel, indtil L2 lyser i displayet (kun R kanaludgang).

4) Juster RT1803 på PCB11, indtil niveauet på TP1808 er 276mV ±22mV.

7. Kanalseparation

1) Slut en stereogenerator til antenneindgangen. Indstil generatoren på stereo uden modulation i venstre kanal.

2) Slut et oscilloskop til TP1807 på PCB11.

3) Indstil videobåndoptageren til at modtage stereosignalet.

4) Juster RT1804 til minimum.

6. TUNING-KREDSLØB

1. 15,6kHz fritløbende

1) Slut en frekvenstæller til TP802 med stel til TP801 på PCB11.

2) Sæt videobåndoptageren i stop-stilling.

3) Juster RT801 på PCB11, indtil en udlæsning på 15,625kHz ±100Hz opnås.

7. KARAKTERGENERATORKREDSLØB

1. Karakterposition

1) Slut et TV til RF OUT-stikket.

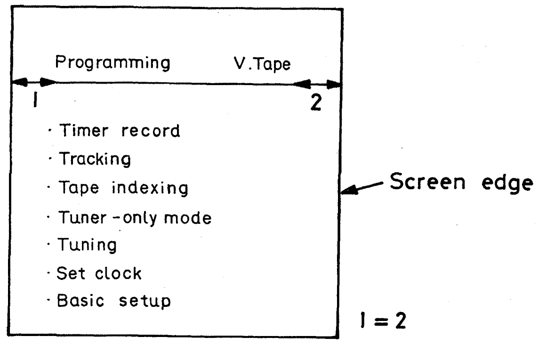
2) Slut en farvebjælkegenerator til ben 20 (video ind) på A/V-stikket.

3) Sæt videobåndoptageren i stop-stilling.

4) Tryk på SOURCE-knappen på det sekundære betjeningspanel, indtil AUX lyser i displayet.

5) Indstil videobåndoptageren til at vise en menu på TV-skærmen.

6) Juster RT1401 på PCB11, indtil afstandene 1 og 2 mellem karaktererne og skærmens kanter er ens.



8. SIGNALOMSKIFTERKREDSLØB

1. Video-indgangsniveau

1) Slut et TV til RF OUT-stikket.

2) Slut en farvebjælkegenerator til ben 20 (video ind) på A/V-bøsningen.

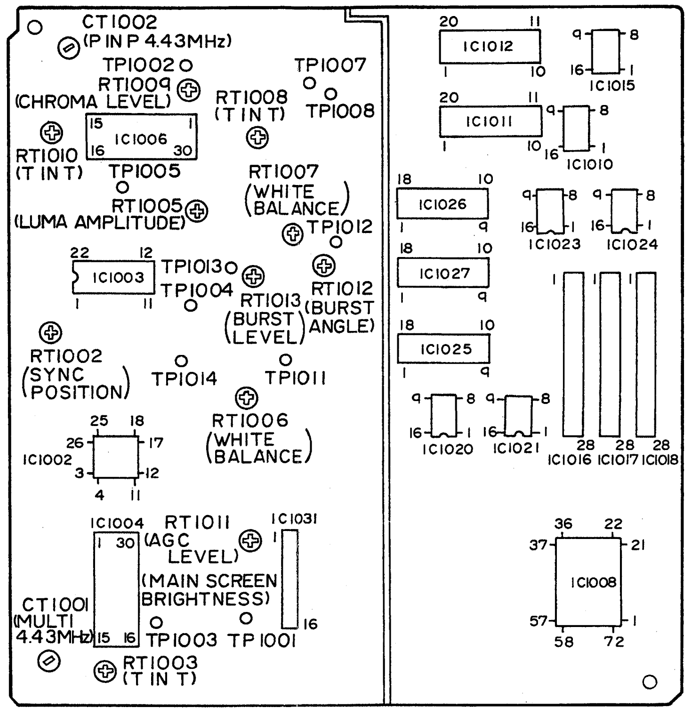
3) Slut et oscilloskop til IC1530 ben 13 på PCB11.

4) Sæt videobåndoptageren i stop-stilling.

5) Tryk på SOURCE-knappen på det sekundære betjeningspanel, indtil AUX lyser i displayet.

6) Juster RT1501 på PCB11 indtil video-signalniveauet er 1Vpp. Billedets lysstyrke skal nu være stabil.

9. DIGITALKREDSLØB


CT1002
(P IN P 4.43MHz)
TP1002
RT1009
(CHROMA LEVEL)
TP1007
RT1008
(T INT)
TP1008
IC1006
RT1010
(T INT)
TP1005
RT1007
(WHITE BALANCE)
RT1005
(LUMA AMPLITUDE)
TP1012
IC1003
TP1013
TP1004
RT1013
(BURST LEVEL)
RT1012
(BURST ANGLE)
RT1002
(SYNC POSITION)
TP1014
TP1011
IC1002
RT1006
(WHITE BALANCE)
IC1004
RT1011
(AGC LEVEL)
(MAIN SCREEN BRIGHTNESS)
IC1031
CT1001
(MULTI 4.43MHz)
TP1003
TP1001
RT1003
(T INT)
IC1012
IC1015
IC1011
IC1010
IC1026
IC1023
IC1024
IC1027
IC1025
IC1020
IC1021
IC1016
IC1017
IC1018
IC1008

DIGITAL SIGNAL PROCESSING PCB I

9a Opstilling:
Alle justeringer af digitalkredsløbet skal foretages med et TV og en farvebjælkegenerator sluttet til videobåndoptageren. Hvis der anvendes et Beovision L/LX 2502/2802 (S/W 2,1 eller senere versioner) eller et MX 5000, kan videobåndoptageren betjenes med Beolink 1000 via TV'et. Hvis der anvendes en anden type TV, kan videobåndoptageren betjenes med Beolink 1000 og en IR-føler (bestill.nr. 8915500) forbundet til REMOTE CONTROL stikket.

I denne opstilling er der anvendt en IR-føler.

1) Slut farvebjælkegeneratorens videoudgang til ben 20 på AV-stikket på videobåndoptageren.

2) Slut farvebjælkegeneratorens RF-udgang til AERIAL-indgangen på videobåndoptageren.

3) Slut RF OUT på videobåndoptageren til TV'ets antenneindgang.

4) Slut IR-føleren til videobåndoptagerens REMOTE CONTROL-indgang.

5) Sæt farvebjælkegeneratoren til at sende et farvebjælkesignal.

6) Indstil TV'et til at modtage RF-signalet fra videobåndoptageren.

7) Indstil videobåndoptageren (se side 7-10) til at modtage RF-signalet fra farvebjælkegeneratoren.

8) Alle justeringer skal foretages med videobåndoptageren i stop-stilling (BEMÆRK! Time out fra stop-stilling = 8 min.).

9) Billede-i-billede funktion: Tryk V.TAPE – TV – PICTURE – V.TAPE på Beolink 1000 før statuslinien (V.Tape Play) forsvinder. Der skal nu være et farvebjælkebillede i det store såvel som det lille billede.

10) Multibilledefunktion: Tryk PICTURE – STOP på Beolink 1000. Der skal nu være 4, 9 eller 16 små farvebjælkebilleder, afhængig at grundopstillingen (Basic setup menu).

11) Picture-freeze-stilling: Tryk STOP på Beolink 1000. Billedet skal nu vise en farvebjælke og »V.Tape Freeze«.

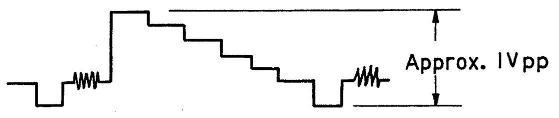
12) Tryk ● (ST.BY) for at forlade funktionerne.

1. AGC-niveau

1) Slut et oscilloskop til TP1001 på PCB1.

2) Se pkt. 9a for opstilling (billede-i-billede)

3) Juster RT1011 på PCB1, indtil amplituden er ca. 1Vpp. Lysstyrken på det lille og det store billede skal passe sammen.

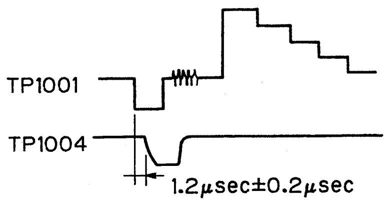

Approx. 1Vpp

2. Synk.-signal position

1) Slut CH1 på et oscilloskop til TP1001 og CH2 til TP1004 på PCB1.

2) Se pkt. 9a for opstilling (billede-i-billede)

3) Juster RT1002 på PCB1, indtil synksignalets forflanke er 1,2µs ±0,2µs foran signalet på TP1004. Det lille billede skal være centreret.


TP1001
TP1004
1.2µsec±0.2µsec

3. 4,43 MHz

1) Indstil videobåndoptageren i multibilledefunktion (se pkt. 9a ang. opstilling).

2) Juster CT1001 på PCB1, indtil den mest stabile farve opnås.

3) Sæt videobåndoptageren i billede-i-billede-funktion (se pkt. 9a ang. opstilling).

4) Kortslut TP1002 på PCB1 til stel.

5) Juster CT1002 på PCB1, indtil den mest stabile farve opnås.

6) Fjern kortslutningen i TP1002.

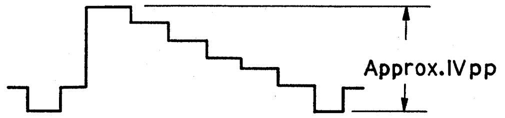
7) Slut en frekvenstæller til TP1005 på PCB1 og kontroller at frekvensen er 4433,62 ±0,05kHz.

4. Luminanssignal-amplitude

1) Slut et oscilloskop til TP1008 på PCB1.

2) Se pkt. 9a ang. opstilling (billede-i-billede).

3) Juster RT1005 på PCB1, indtil amplituden er ca. 1Vpp. Lysstyrken på det lille og det store billede skal passe sammen.


Approx.1Vpp

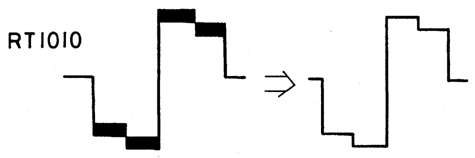
5. Farvemætning (tint)

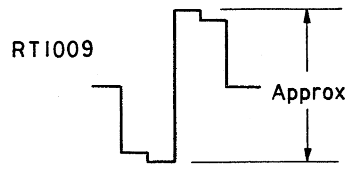
1) Slut et oscilloskop til TP1007 på PCB1.

2) Se pkt. 9a ang. opstilling (billede-i-billede).

3) Juster RT1010 på PCB1 så amplituden foroven og forneden ikke fordobles.

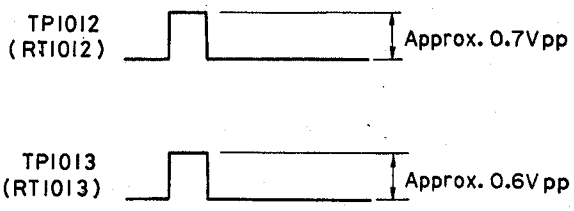
4) Juster RT1009 på PCB1, indtil amplituden er ca. 0,6Vpp. Farvetonen på det lille og det store billede skal passe sammen.




RT1009
Approx.0.6Vpp

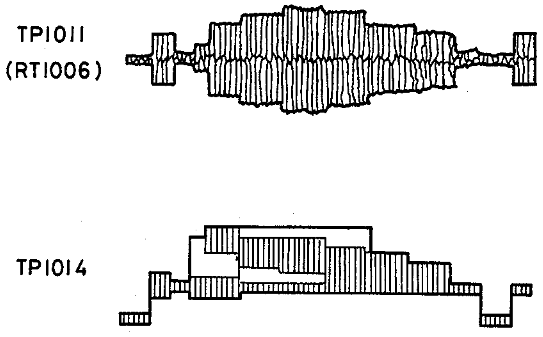
6. Burst-niveau (korrekt farve i multibillede- og picture-freeze-funktionerne)

1) Slut et oscilloskop til TP1012 på PCB1.
2) Se pkt. 9a ang. opstilling (billede-i-billede).
3) Juster RT1012 på PCB1, indtil amplituden er ca. 0,7Vpp.
4) Slut et oscilloskop til TP1013 på PCB1.
5) Juster RT1013 på PCB1, indtil amplituden er ca. 0,6Vpp.


TP1012
(RT1012)
Approx. 0.7Vpp
TP1013
(RT1013)
Approx. 0.6Vpp

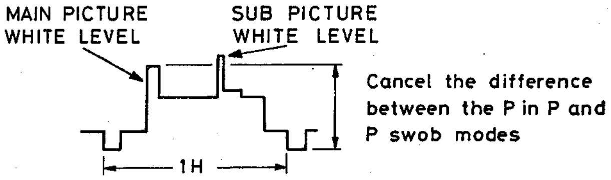
7. Hvidbalance

1) Slut CH1 på et oscilloskop til TP1011 og CH2 til TP1014 på PCB1. Trig på CH2.
2) Se pkt. 9a ang. opstilling (picture-freeze)
3) Juster RT1006 på PCB1 til minimum krominans-signal på TP1011.
4) Juster RT1007 på PCB1, for at opnå den samme farve under picture-freeze og gennemsløjfet billede. Med Beolink 1000 skiftes mellem gennemsløjfet billede og picture-freeze: STOP = picture-freeze, PLAY = gennemsløjfet billede.


TP1011
(RT1006)
TP1014

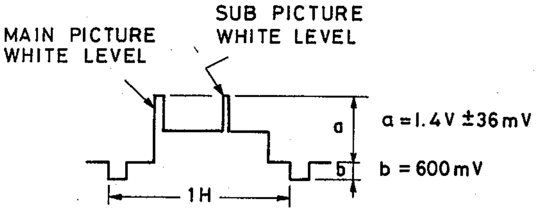
8. AGC niveau (finjustering)

1) Slut et oscilloskop til TP1014 på PCB1.
2) Se pkt. 9a ang. opstilling (billede-i-billede).
3) Juster RT1011 på PCB1, indtil lysstyrken på det lille billede passer med lysstyrken på det store billede under billede-swap. Den hvide farve på det store og det lille billede skal passe sammen. Billede-swap: tryk 0.


MAIN PICTURE
WHITE LEVEL
SUB PICTURE
WHITE LEVEL
1H
Cancel the difference between the P in P and P swob modes

9. Lysstyrke på det lille billede

1) Slut et oscilloskop til TP1014 på PCB1.
2) Se pkt. 9a ang. opstilling (billede-i-billede).
3) Juster RT1005 på PCB1, indtil det lille billedes lysstyrke passer med lysstyrken på det store billede.
Hvidtniveau: a = 1,4V ±36mV.


MAIN PICTURE
WHITE LEVEL
SUB PICTURE
WHITE LEVEL
a
b
1H
a = 1.4V ±36mV
b = 600mV

10. Farvesammenhæng i det store og det lille billede

1) Se pkt. 9a ang. opstilling (billede-i-billede).
2) Juster RT1003, RT1008 og RT1009 på PCB1, indtil farverne på det lille billede passer med farverne på det store billede.

11. Farvesammenhæng i gennemsløjfnings-/picture-freeze-billede

1) Se pkt. 9a ang. opstilling (picture-freeze).

2) Mens der skiftes mellem gennemsløjfet billede og picture-freeze med Beolink 1000 (PLAY= gennemsløjfet billede, STOP= picture-freeze), justeres RT1012 og RT1013 på PCB1, indtil farverne på det gennemsløjfede billede passer med farverne på picture-freeze.

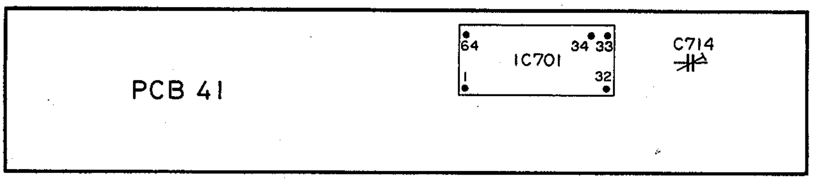
10. TIMER KREDSLØB

1. 32,768kHz Osc.

1) Slut en frekvenstæller til ben 34 på IC701 med stel til ben 32 på IC701 på PCB41. Anvend en 1:10 probe.

2) Sæt videobåndoptageren i stop-stilling.

3) Juster C714 på PCB41, indtil en udlæsning på 32,768kHz opnås. Anvend et ikke-ledende værktøj til justeringen, da spredningskapaciteter kan få frekvensen til at variere.



MECHANICAL ADJUSTMENTS

MECHANISM STATE SWITCH

Purpose: To detect the mechanism state correctly and prevent malfunctions.

The tape mechanism must be in the eject mode.

1. **Make sure that the arrow on the centre shaft of the mechanism state switch points towards the arrow of number 1 of the mechanism mode indicator. Also make sure that hole (A) next to the mechanism state switch and the hole in the mode gear are aligned.**
2. **If the above alignments are not obtained, adjust as follows:**

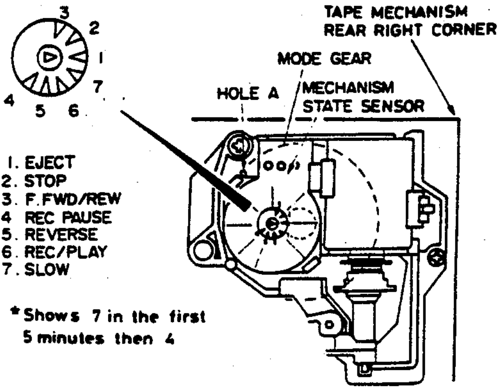
1) Remove the mechanism state switch/threading in/out motor assembly.

2) Move the mode gear to align the position of hole (A) with the hole in the bracket below.

3) Turn the gear on the rear-side of the mechanism state switch so that the arrow on the centre shaft of the switch points towards the arrow of number 1 of the mechanism mode indicator.

4) Reinstall the mechanism state switch/threading in/out motor assembly in the above condition.

3. **Load a blank tape and carry out various operations to make sure that loading, unloading and threading in/out are carried out correctly.**


3
2
1
7
4
5
6
1. EJECT
2. STOP
3. F.FWD/REW
*4 REC PAUSE
5. REVERSE
6. REC/PLAY
7. SLOW
*Shows 7 in the first 5 minutes then 4
TAPE MECHANISM REAR RIGHT CORNER
MODE GEAR
HOLE A
MECHANISM STATE SENSOR

TAPE TRANSPORT SYSTEM

The tape transport system is the path from the supply reel disk passing through the video heads to the take-up reel disk. The transport system parts, especially the parts which come into direct contact with the tape, should be kept clean without scratches, dust, oil, etc.

The tape transport system is adjusted before the VTR leaves the factory. Therefore, after replacing parts in the transport system, simply adjust the new parts correctly to ensure that the transport system functions correctly.

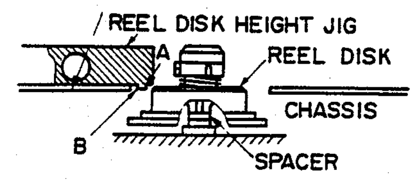
1. Reel disk height

Purpose: To set the reels of the cassette to the specified height, thus determining the height of the tape.

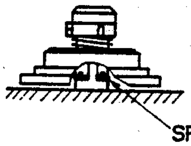
The cassette loading mechanism must be removed.

1) Mount the height reference plate and place the reel disk height jig on top of it.

2) Make sure that the top edge height of the reel disk is between the levels A and B on the reel disk height jig.


HEIGHT REFERENCE PLATE
/REEL DISK HEIGHT JIG
A
REEL DISK
CHASSIS
B
SPACER

SUPPLY REEL DISK



TAKE-UP REEL DISK

⇨

3) If the disk height is not between the levels A and B on the jig, replace the spacers (0.5 mm thick) under the reel disk or adjust them.

NOTE! If the tension arm and the tension band are removed, make sure to adjust the tension pole position and the tension after reinstallation of the tension arm and the tension band.

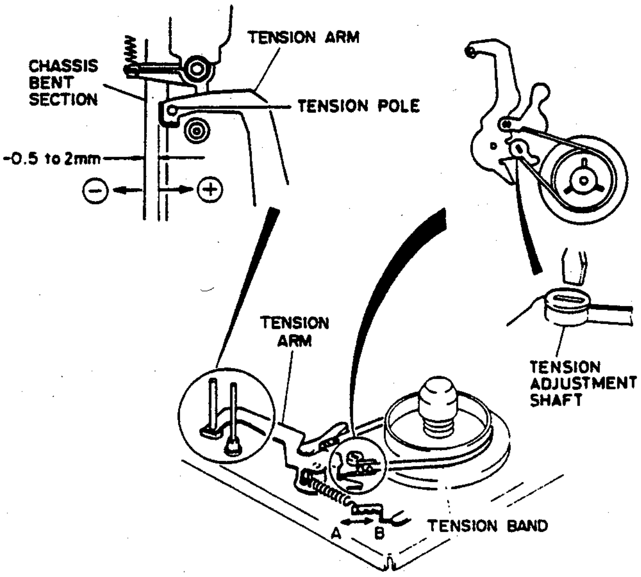
2. Tension pole position and Tension

Purpose: To make the tension of the tape constant in order to stabilize the contact between the video heads and the tape.

The cassette loading mechanism must be removed.

1) Stick a piece of paper over the light-emitting part of the tape-end sensor LED (placed in the middle of the tape mechanism). Light must not be supplied from the outside (from e.g. a work lamp).
2) Without loading a cassette, press the PLAY button to bring the set in the threaded-in position.
3) Turn the tension adjustment shaft so that the end of the tension arm is at a distance of between 0.5 and 2 mm from the outer side of the bent chassis.
4) After the adjustment, press the EJECT and PLAY buttons to make the set thread out and in without a cassette. Check the adjustment.
5) Load a tension tape and play it.
   Reference value: 34 – 44 g/cm.
   If the reading is higher than the reference, move the spring in direction (A).
   If the reading is lower than the reference, move the spring in direction (B).

   NOTE! If the tension position is changed considerably (more than 6 g/cm), recheck the tension pole position. If it has drifted, readjust the tension pole position and the tension.

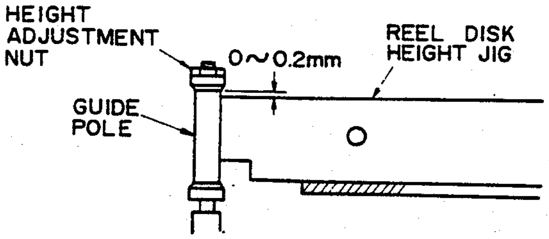


3. Supply and Take-up guide pole height

Purpose: To regulate the tape height.

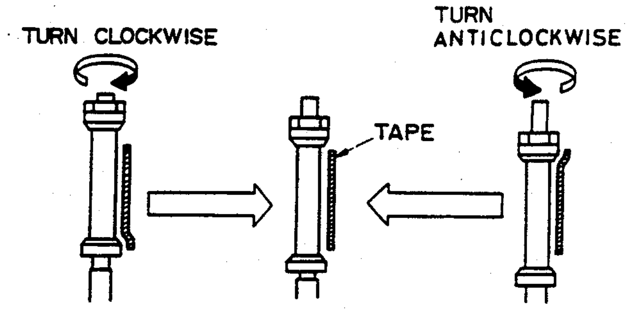
The cassette loading mechanism must be removed.

1) Mount the height reference plate and place the reel disk height jig on top of it.
2) Set the clearance between the bottom of the guide pole's upper flange and the top of the reel disk height jig to between 0 and 0.2 mm.



3) Load a blank tape. Play it and make sure that the tape does not ride over the upper or lower flanges of the guide poles.

4) If the tape rides over either flange, adjust the height of the guide poles as shown on the drawing.


TURN CLOCKWISE
TAPE
TURN ANTICLOCKWISE

4. Supply and Take-up guide roller height (coarse adjustment)

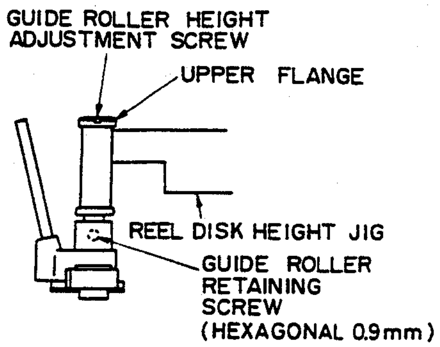
Purpose: To regulate the height of the tape so that the bottom of the tape runs along the tape guide line on the cylinder.

The cassette loading mechanism must be removed.

1) Mount the height reference plate and place the reel disk height jig on top of it.

2) Loosen the guide roller retaining screw (only so much that the guide roller height adjustment does not change during threading-in/-out or during play).

3) Align the bottom of the upper flange of the guide roller and the top of the reel disk height jig.


GUIDE ROLLER HEIGHT ADJUSTMENT SCREW
UPPER FLANGE
REEL DISK HEIGHT JIG
GUIDE ROLLER RETAINING SCREW (HEXAGONAL 0.9mm)

Fine adjustment

1) Mount the cassette loading mechanism.

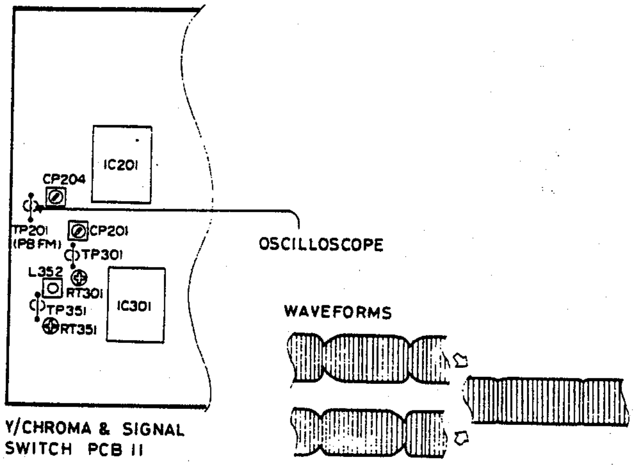
2) Connect an oscilloscope to TP201 on PCB11.

3) Load alignment tape part no. 6780093 and play it.

4) Set the tracking to maximum FM output (see page 7-10).

5) Turn the guide roller height adjustment screw slightly to flatten the FM waveform.

6) Tighten the guide roller retaining screw.


IC201
CP204
TP201 (PB FM)
CP201
TP301
L352
RT301
TP351
RT351
IC301
OSCILLOSCOPE
WAVEFORMS
Y/CHROMA & SIGNAL SWITCH PCB 11

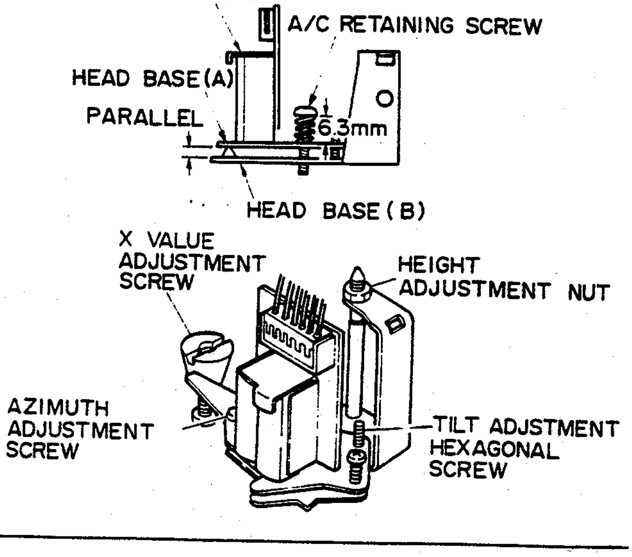
5. Audio/Control (A/C) Head (coarse adjustment)

Purpose: To keep the contact between the tape and head so that the specified track is recorded and played back.

The cassette loading mechanism must be removed.

1) Adjust the A/C retaining screw so that the top of the spring section on the screw is 6.3 mm above the top of the head base (A).

2) Adjust the tilt adjustment screw (hexagonal 1.5 mm) and the azimuth adjustment screw to make the head bases (A) and (B) parallel.


A/C HEAD
A/C RETAINING SCREW
HEAD BASE (A)
PARALLEL
6.3mm
HEAD BASE (B)
X VALUE ADJUSTMENT SCREW
HEIGHT ADJUSTMENT NUT
AZIMUTH ADJUSTMENT SCREW
TILT ADJSTMENT HEXAGONAL SCREW

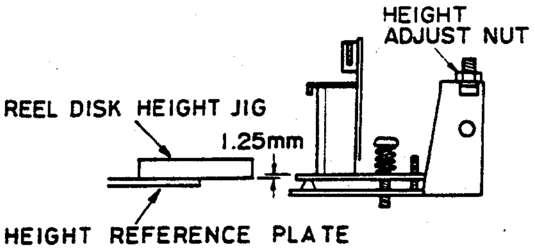
3) Mount the height reference plate. Place the reel disk height on top of it and push the jig towards the head base (A).

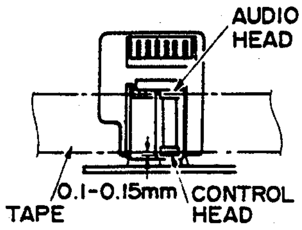
4) Adjust the height adjustment nut to a clearance of approx. 1.25 mm from the top of the head base (A) to the top of the height reference plate.

5) Remove the adjustment tools and mount the cassette loading mechanism.

6) Load a blank tape and play it.

7) Check whether the tape curls or rides over the A/C head. If this is the case, readjust the tilt adjustment screw, the azimuth adjustment screw and the height adjustment nut.
The height of the A/C head is ideal when the tape is between 0.1 and 0.15 mm from the bottom edge of the core of the control head.


HEIGHT
ADJUST NUT
REEL DISK HEIGHT JIG
1.25mm
HEIGHT REFERENCE PLATE

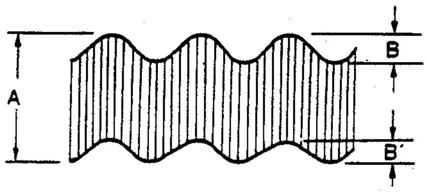

AUDIO
HEAD
0.1-0.15mm
TAPE
CONTROL
HEAD

Fine adjustment

1) Connect an oscilloscope to pin 1 (right out) and pin 3 (left out) of the A/V socket.

2) Load alignment tape part no. 6780093 and play the 6kHz section.

3) Adjust the azimuth adjustment screw, the height adjustment nut and the tilt adjustment screw slightly to increase the audio output to a maximum and make it as flat as possible (minimum fluctuation).



A : Maximum BB' : Minimum

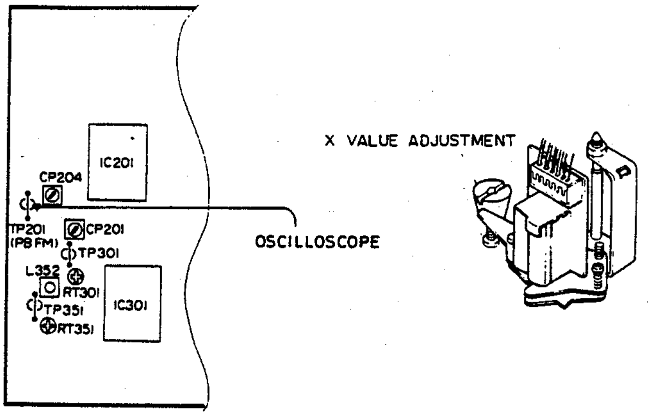
6. X Value

Purpose: To obtain compatibility with other VCRs.

NOTE! Always carry out the tracking preset adjustment (see page 5-8) before the X Value adjustment.

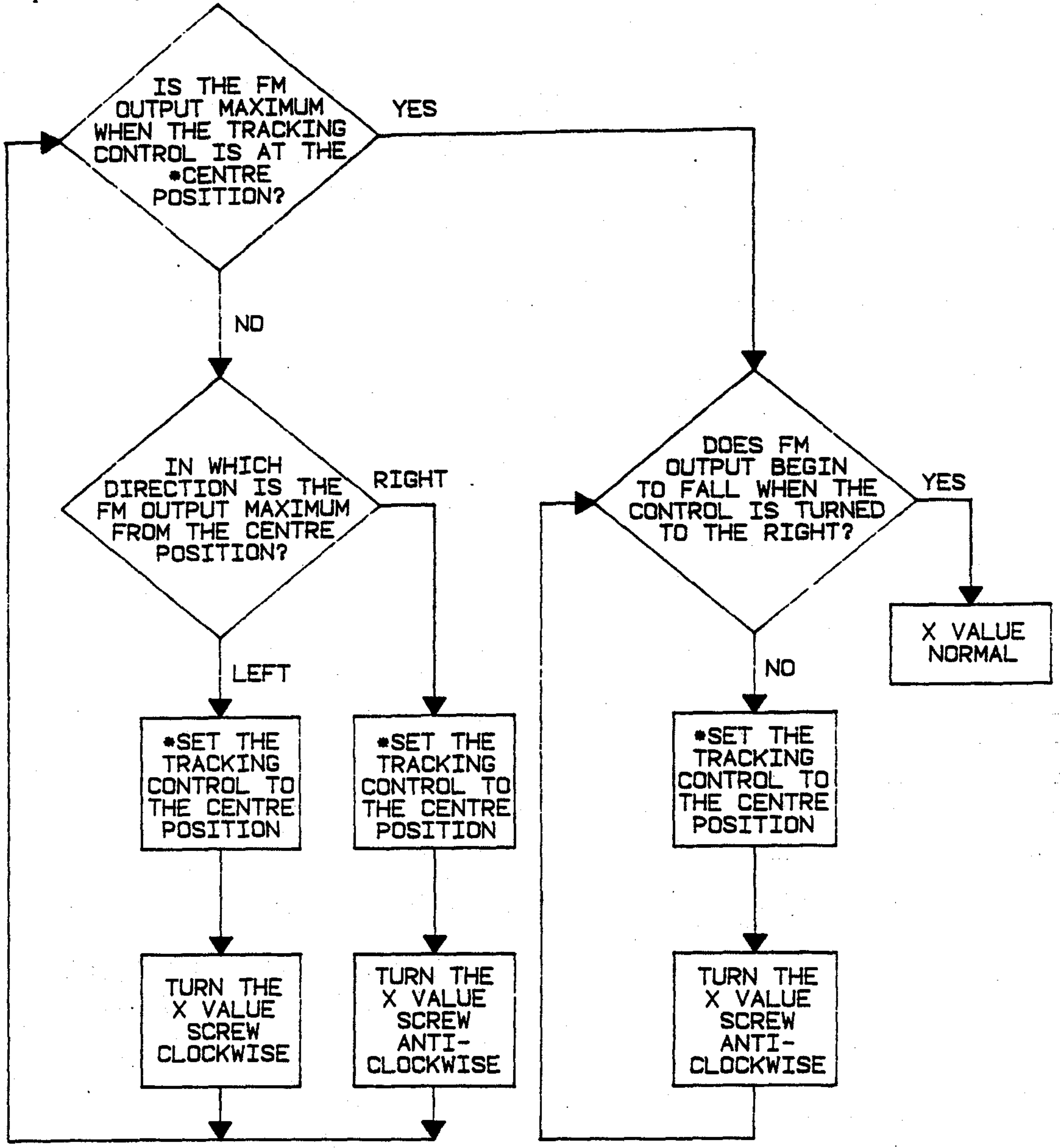
1) Connect an oscilloscope to TP201 on PCB11.

2) Load alignment tape part no. 6780093 and play the stairsteps section.


IC201
CP204
TP201
(PB FM)
CP201
TP301
L352
RT301
TP351
RT351
IC301
OSCILLOSCOPE
X VALUE ADJUSTMENT

Y/CHROMA & SIGNAL
SWITCH PCB 11

3) Adjust the X value screw to maximum FM output, then turn the screw clockwise until the FM output level just starts to fall.

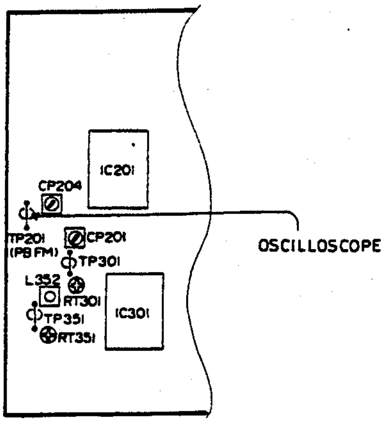

IS THE FM OUTPUT MAXIMUM WHEN THE TRACKING CONTROL IS AT THE *CENTRE POSITION?
YES
NO
IN WHICH DIRECTION IS THE FM OUTPUT MAXIMUM FROM THE CENTRE POSITION?
RIGHT
LEFT
*SET THE TRACKING CONTROL TO THE CENTRE POSITION
*SET THE TRACKING CONTROL TO THE CENTRE POSITION
TURN THE X VALUE SCREW CLOCKWISE
TURN THE X VALUE SCREW ANTI-CLOCKWISE
DOES FM OUTPUT BEGIN TO FALL WHEN THE CONTROL IS TURNED TO THE RIGHT?
YES
X VALUE NORMAL
NO
*SET THE TRACKING CONTROL TO THE CENTRE POSITION
TURN THE X VALUE SCREW ANTI-CLOCKWISE

* The tracking control is automatically centred when the cassette is ejected.

7. Adjustments after replacing the Cylinder (Video heads)

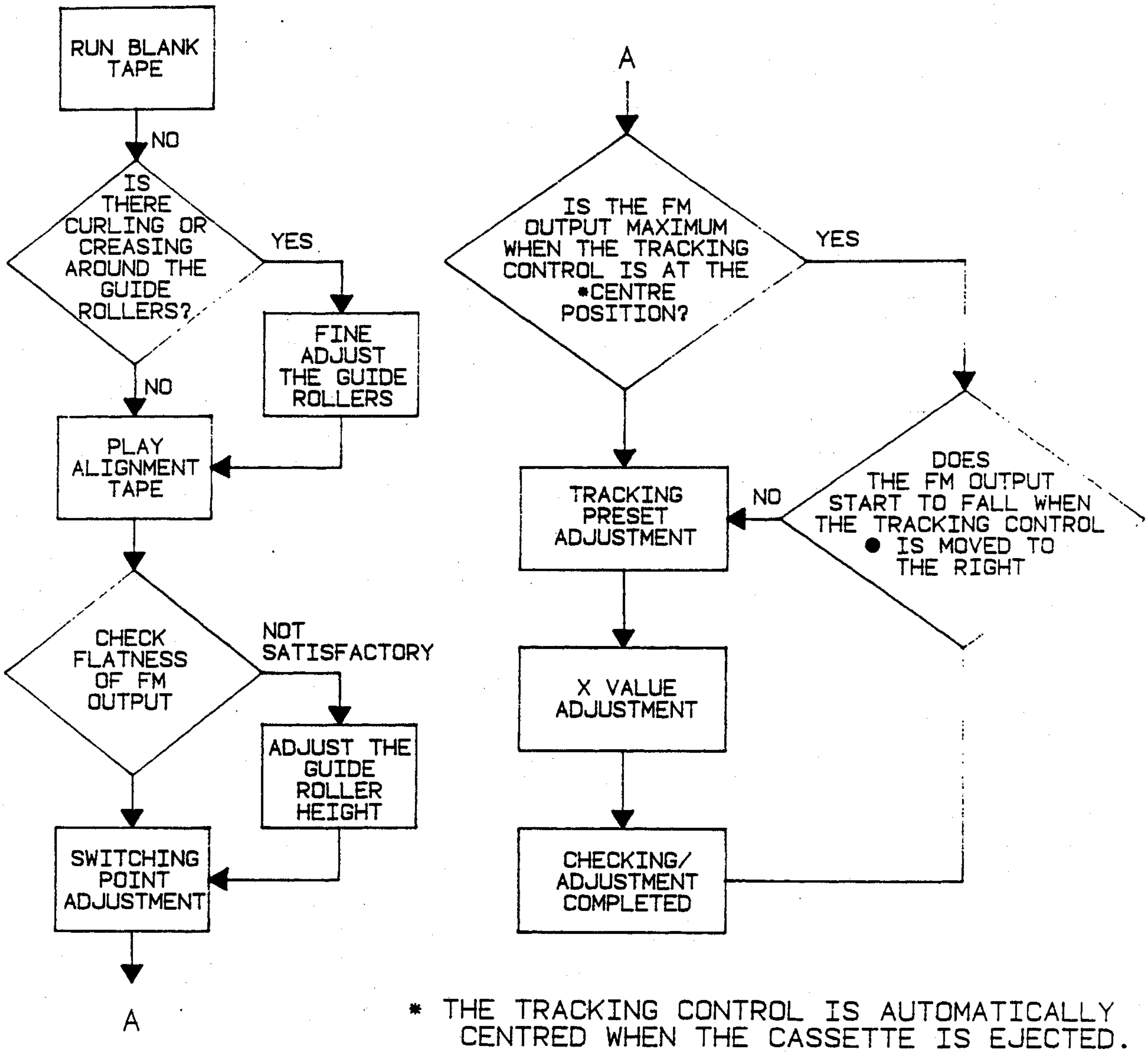
Purpose: To suppress the drift in the height relative to the guide roller and to minimize the X value after replacement of the cylinder.

1) Connect an oscilloscope to TP201 on PCB11.


IC201
CP204
TP201 (PB FM)
CP201
TP301
L352
RT301
TP351
RT351
IC301
OSCILLOSCOPE

Y/CHROMA & SIGNAL SWITCH PCB 11

CHECKING/ADJUSTMENT PROCEDURE


RUN BLANK TAPE
NO
IS THERE CURLING OR CREASING AROUND THE GUIDE ROLLERS?
YES
FINE ADJUST THE GUIDE ROLLERS
NO
PLAY ALIGNMENT TAPE
CHECK FLATNESS OF FM OUTPUT
NOT SATISFACTORY
ADJUST THE GUIDE ROLLER HEIGHT
SWITCHING POINT ADJUSTMENT
A
A
IS THE FM OUTPUT MAXIMUM WHEN THE TRACKING CONTROL IS AT THE *CENTRE POSITION?
YES
DOES THE FM OUTPUT START TO FALL WHEN THE TRACKING CONTROL ● IS MOVED TO THE RIGHT
NO
TRACKING PRESET ADJUSTMENT
X VALUE ADJUSTMENT
CHECKING/ ADJUSTMENT COMPLETED

* THE TRACKING CONTROL IS AUTOMATICALLY CENTRED WHEN THE CASSETTE IS EJECTED.

● TO SET THE TRACKING CONTROL,
SEE PAGE 7-10
SWITCHING POINT, PAGE 5-8
TRACKING PRESET, PAGE 5-8

8. Tension/Torque checks

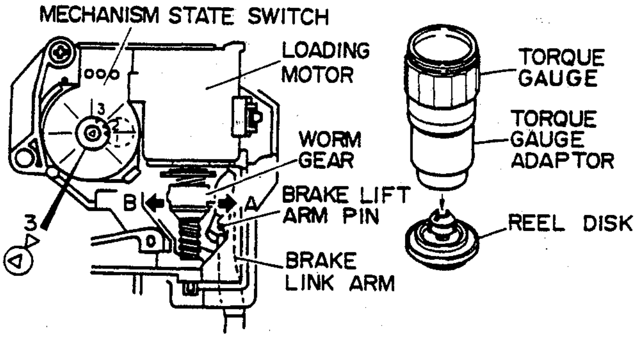
Purpose: Check these if the tape transport is not smooth or the tape speed is not normal.

The cassette loading mechanism must be removed.

1) Cover the two tape end sensors (one at each side of the mechanism) using pieces of paper. Now the mechanism can run without a cassette.
2) Perform the check using torque gauge part no. 3621027 and torque gauge adaptor part no. 3014064.

Item	VTR operation mode	Measured reel	Measured value
Main brake torque	Stop (Note-1)	Supply & take-up reel	170 g/cm or more
Threading-out torque	Threading-out	Supply reel	90 ~ 230 g/cm
Fast forward torque	Fast forward	Take-up reel	400 g/cm or more
Rewind torque	Rewind	Supply reel	400 g/cm or more
Take-up torque	Play	Take-up reel	80 ~ 170 g/cm
Back-tension torque	Fast forward	Supply reel	4 ~ 25 g/cm
	Rewind	Take-up reel	

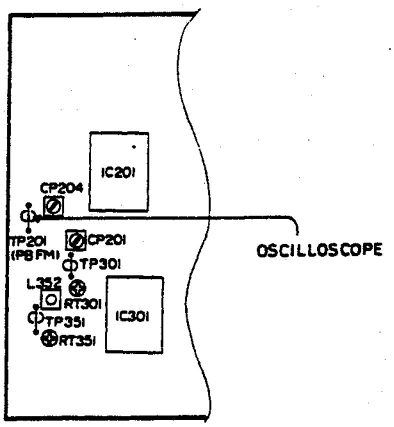
NOTE-1: Turn the worm gear in the direction of arrow (A) in the stop mode. Then shift the pointer on the mechanism state switch to "3" so as to apply the main brake to the supply reel disk. Finally turn the worm gear in the direction of arrow (B) so that the brake link arm is released from the brake lift arm pin (set the reel drive gear (idler) to the centre position).


MECHANISM STATE SWITCH
LOADING MOTOR
TORQUE GAUGE
TORQUE GAUGE ADAPTOR
WORM GEAR
B
A
BRAKE LIFT ARM PIN
3
REEL DISK
BRAKE LINK ARM

Checking the flatness and fluctuations of the FM output

1) Connect an oscilloscope to TP201 on PCB11.

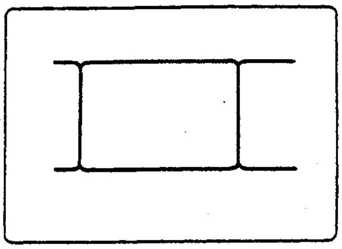
2) Load alignment tape part no. 6780093 and play the stairsteps section.


IC201
CP204
TP201
(PB FM)
CP201
TP301
L352
RT301
TP351
IC301
RT351
OSCILLOSCOPE

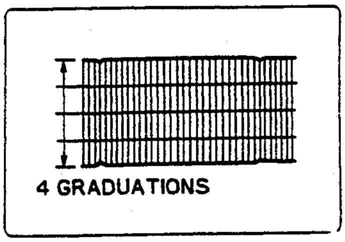
Y/CHROMA & SIGNAL SWITCH PCB 11

To set the tracking control, see page 7-10.

3) Set the tracking control and maximum FM output.



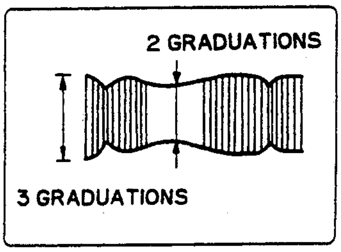
4) Set the FM output to 4 graduations by adjusting the voltage level range of the oscilloscope.


4 GRADUATIONS

5) Adjust the tracking control until the maximum amplitude of the FM output is 3 graduations.

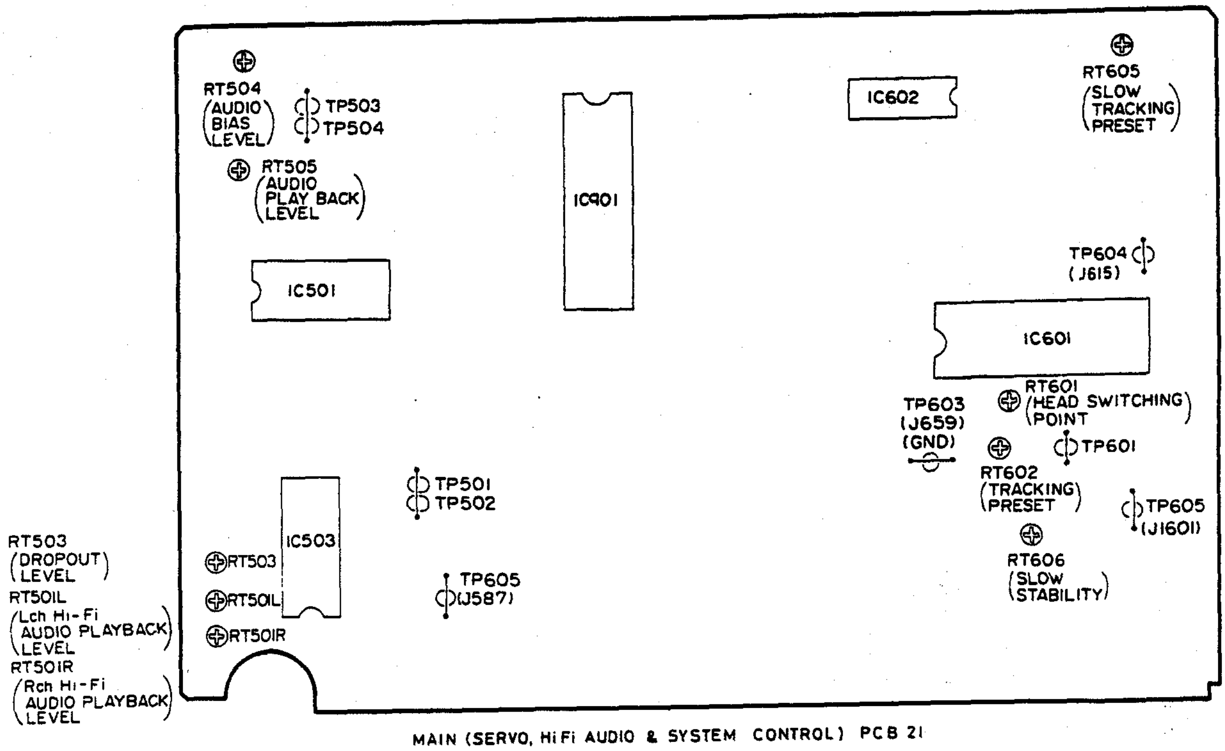
6) Make sure that the minimum amplitude is more than 2 graduations.

7) Make sure that the level fluctuations between the maximum and the minimum amplitudes are less than 13 per cent.

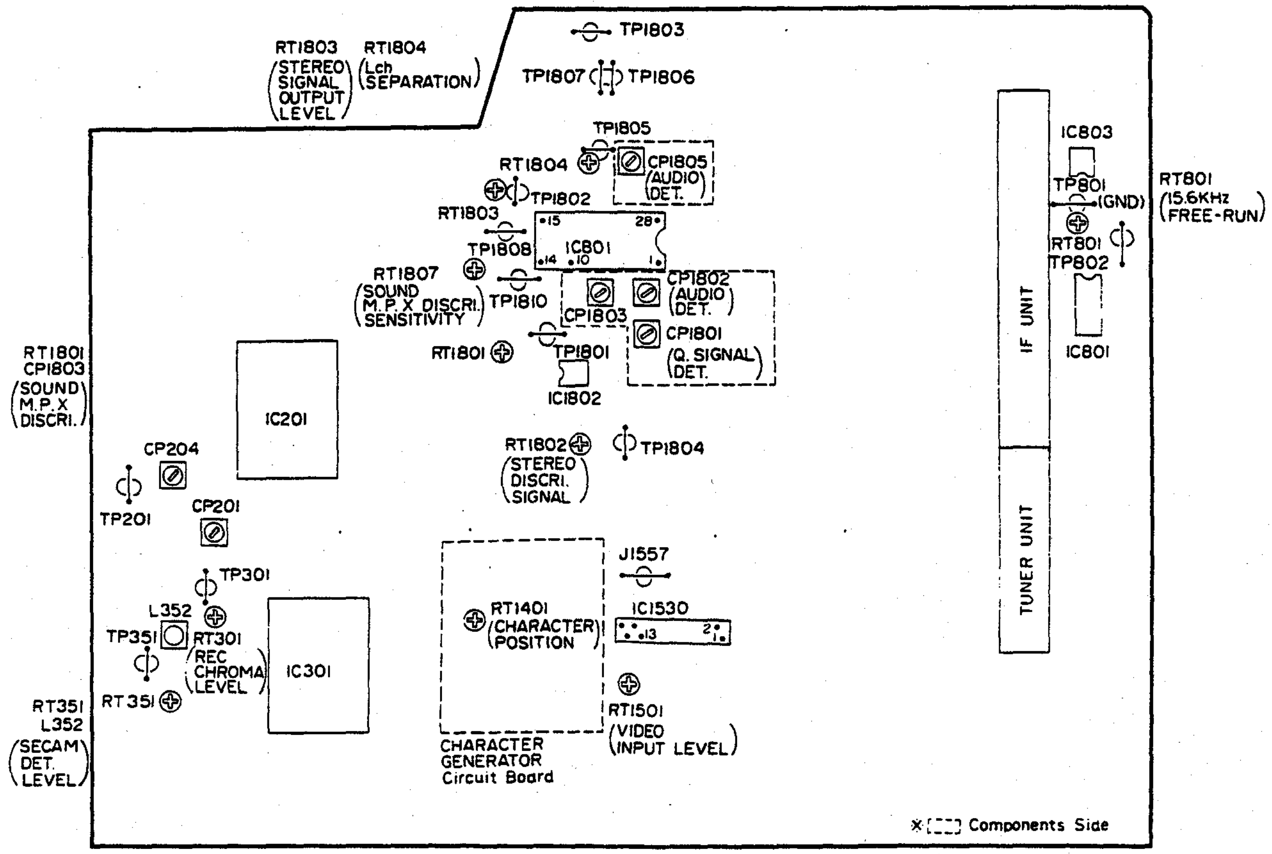

2 GRADUATIONS
3 GRADUATIONS

ELECTRICAL ADJUSTMENTS

Operation:
Many operations of the VTR can only be done by means of the Beolink 1000 remote control terminal. To enable the VTR to receive the remote control signals, an IR sensor (part no 8915500) connected to the REMOTE CONTROL socket can be used. A brief operation guide can be seen on page 7-10.


RT504 (AUDIO BIAS LEVEL)
TP503
TP504
RT505 (AUDIO PLAY BACK LEVEL)
IC501
IC901
IC602
RT605 (SLOW TRACKING PRESET)
TP604 (J615)
IC601
TP603 (J659) (GND)
RT601 (HEAD SWITCHING POINT)
TP601
RT602 (TRACKING PRESET)
TP605 (J1601)
RT606 (SLOW STABILITY)
TP501
TP502
TP605 (J587)
IC503
RT503
RT501L
RT501R
RT503 (DROPOUT LEVEL)
RT501L (Lch Hi-Fi AUDIO PLAYBACK LEVEL)
RT501R (Rch Hi-Fi AUDIO PLAYBACK LEVEL)

MAIN (SERVO, HiFi AUDIO & SYSTEM CONTROL) PCB 21

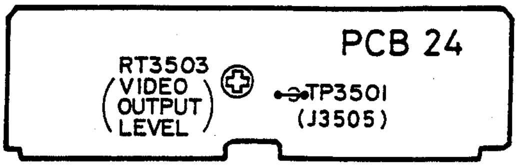

RT1803 (STEREO SIGNAL OUTPUT LEVEL)
RT1804 (Lch SEPARATION)
TP1803
TP1807
TP1806
TP1805
RT1804
CP1805 (AUDIO DET.)
TP1802
RT1803
TP1808
IC801
RT1807 (SOUND M.P.X DISCRI. SENSITIVITY)
TP1810
CP1802 (AUDIO DET.)
CP1803
CP1801 (Q. SIGNAL DET.)
RT1801
TP1801
IC1802
IC803
TP801 (GND)
RT801
TP802
IC801
RT801 (15.6KHz FREE-RUN)
IF UNIT
TUNER UNIT
RT1801 CP1803 (SOUND M.P.X DISCRI.)
IC201
CP204
TP201
CP201
RT1802 (STEREO DISCRI. SIGNAL)
TP1804
TP301
L352
TP351
RT301 (REC CHROMA LEVEL)
IC301
RT351
RT351 L352 (SECAM DET. LEVEL)
RT1401 (CHARACTER POSITION)
CHARACTER GENERATOR Circuit Board
J1557
IC1530
RT1501 (VIDEO INPUT LEVEL)
※[ ] Components Side

Y/CHROMA & SIGNAL SWITCH PCB 11

1. RF CIRCUIT

1. Video output level

1) Connect a TV to the RF OUT socket.
2) Connect a colour bar generator to pin 20 (video in) on the A/V socket.
3) Connect an oscilloscope to TP3501 (J3505) on PCB 24.
4) Set the VTR in stop mode.
5) Press SOURCE on the front keys until AUX lights up in the display.
6) Adjust RT3503 on PCB 24 until the video output level at TP3501 is 2Vpp.


PCB 24
RT3503
VIDEO
OUTPUT
LEVEL
TP3501
(J3505)

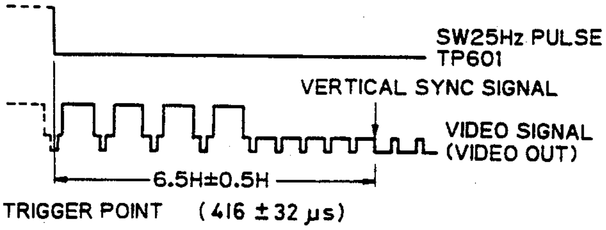
2. SERVO CIRCUIT

1. Head switching point

1) Connect CH1 on an oscilloscope to pin 19 (video out) on the A/V socket and CH2 to TP601 (SW25Hz) on PCB 21. Trigger on CH1.
2) Load alignment tape part no. 6780093 and play the colour bar section.
3) Adjust RT601 on PCB 21 so that the trailing edge (trigger point) of the SW25Hz signal is 6.5 ±0.5 horizontal lines (416 ±32μS) ahead of the vertical sync. in the video signal.

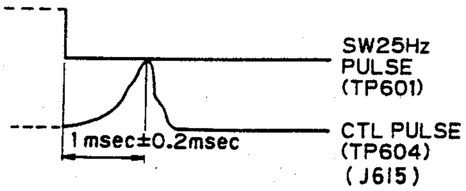
Check of Head switching point during recording

4) Connect an oscilloscope as in point 1.
5) Connect a generator with a grey scale signal to the aerial input.
6) Load a blank tape and make a recording.
7) Check whether the trailing edge (trigger point) of the SW25Hz signal is 5 to 8 horizontal lines ahead of the vertical sync. in the video signal. If it is less than 5 horizontal lines ahead, remove R692 on PCB 21.


SW25Hz PULSE
TP601
VERTICAL SYNC SIGNAL
VIDEO SIGNAL
(VIDEO OUT)
6.5H±0.5H
TRIGGER POINT
(416 ±32 μs)

2. Tracking preset

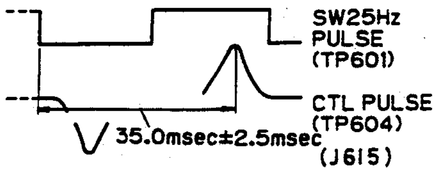
1) Connect CH1 on an oscilloscope to TP601 (SW25Hz) and CH2 to TP604 (CTL pulse) on PCB 21. Trigger on CH1.
2) Set the tracking control in its centre position. (The tracking control is automatically centred when the cassette is ejected).
3) Load a blank tape and make a recording of a TV test picture.
4) Play back the recording.
5) Adjust RT602 on PCB 21 so that the trailing edge (trigger point) of the SW25Hz signal is 1mS ±0.2mS ahead of the CTL signal.


SW25Hz
PULSE
(TP601)
CTL PULSE
(TP604)
(J615)
1 msec±0.2msec

3. Slow tracking preset, Slow stability and Vert. sync.

Follow the same procedure as for Tracking preset, only make the playback in slow mode. (Using the Beolink 1000, press V.TAPE and then, when the tape is running, press STOP and >>).

1) For Slow tracking preset, adjust RT605 on PCB 21 so that the trailing edge (trigger point) of the SW25Hz signal is 35mS ±2.5 mS ahead of the peak of the CTL signal.


SW25Hz PULSE (TP601)
CTL PULSE (TP604) (J615)
35.0msec±2.5msec

2) For Slow stability, adjust RT606 on PCB 21 to minimum horizontal jitter during slow picture.

3) For Vert. sync., adjust the potentiometer marked TAPE STILL PICTURE ADJ. (RT3501 on PCB 24) on the left rear end of the VTR to minimum vertical jitter during slow and still picture (to get still picture, press STOP on the Beolink 1000).

3. Y/CHROMA CIRCUIT

1. Rec. chroma level

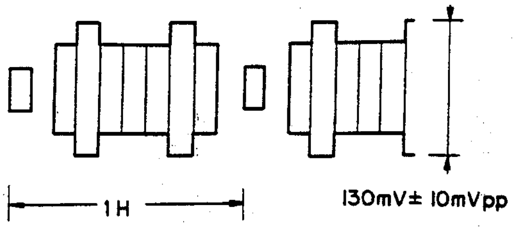
1) Connect an oscilloscope to TP301 on PCB 11.

2) Connect a colour bar generator to pin 20 (video in) on the A/V socket.

3) Set the VTR in stop mode.

4) Press the button SOURCE on the secondary operating panel until AUX lights up in the display.

5) Adjust RT301 on PCB 11 until the amplitude is 130mV ±10mVpp.


1H
130mV± 10mVpp

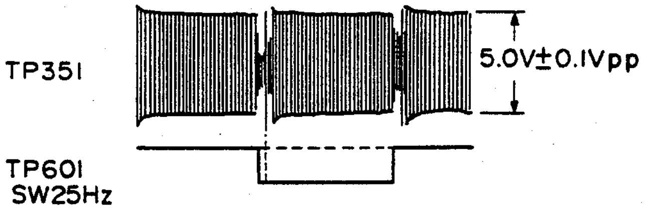
2. Secam detect level

1) Connect CH1 on an oscilloscope to TP351 on PCB 11 and CH2 to TP601 on PCB 21.

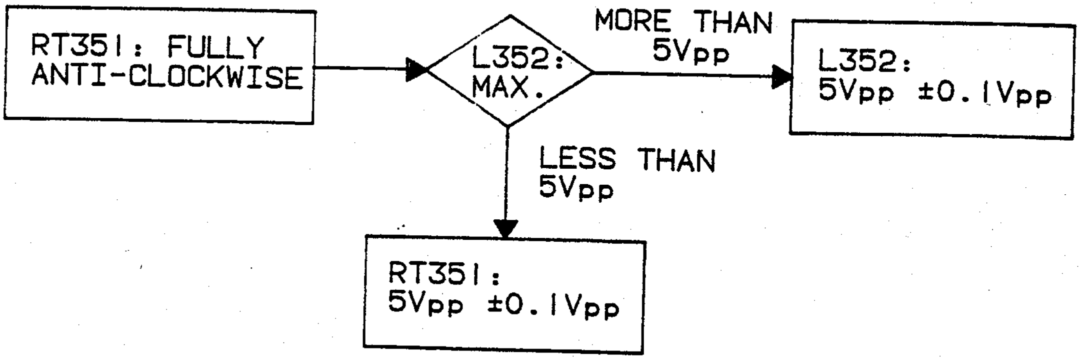
2) Connect a Secam B/G colour bar generator to pin 20 (video in) on the A/V socket.

3) Press the button SOURCE on the secondary operating panel until AUX lights up in the display.

4) Load a blank tape and set the VTR in recording mode.


TP351
5.0V±0.1Vpp
TP601 SW25Hz

Procedure:


RT351: FULLY ANTI-CLOCKWISE
L352: MAX.
MORE THAN 5Vpp
L352: 5Vpp ±0.1Vpp
LESS THAN 5Vpp
RT351: 5Vpp ±0.1Vpp

4. AUDIO

1. Hi-Fi Audio playback level

1) Connect an AF voltmeter to pin 1 (right out) and pin 3 (left out) on the A/V socket.

2) Load Hi-Fi alignment tape part no. 6780096 and play it.

3) Adjust RT501L (left) and RT501R (right) on PCB 21 until a reading of 1.03V ±0.06V is obtained.

After carrying out this adjustment, make the Dropout level adjustment.

2. Dropout level

1) Short-circuit TP502 on PCB 21 to ground.

2) Short-circuit J587 on PCB 21 to ground.

3) Connect a DC voltmeter to TP501 on PCB 21.

4) Load alignment tape part no. 6780093 and play it.

5) Adjust RT 503 on PCB 21 until a reading of 2.5V ± 0.1V DC is obtained.
6) Remove the short-circuits.

3. Audio playback level

1) Connect an AF voltmeter to pin 3 (left out) on the A/V socket.

2) Load alignment tape part no. 6780093 and play the 1kHz section.

3) Adjust RT505 on PCB 21 until a reading of 516mV ± 30mV is obtained.

4. Audio bias level

1) Connect an AF voltmeter to TP504 with ground to TP503 on PCB 21.

2) Load a blank tape and make a recording without signal.

3) Adjust RT504 on PCB 21 until a reading of 2.3mV ± 1mV is obtained.

5. MULTIPLEX DEMODULATOR
Note: Make sure that RT1801, RT1802, RT1803 and RT1804 on PCB 11 are as close to their centre position as possible.

1. Sound M.P.X. Discriminator sensitivity

1) Set the VTR in stop mode. Disconnect the aerial cable and detune the VTR.

2) Connect a tone generator and a frequency counter to TP1801 on PCB 11, and set the tone generator to an output of 196Hz, 40mV.

3) Connect a DC voltmeter to TP1810 on PCB 11.
4) Adjust RT1807 on PCB 11 until a reading of 6.10V ± 0.05V DC is obtained.

2. Audio detection

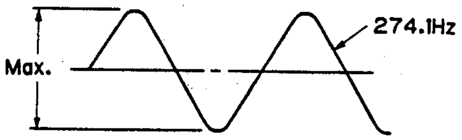
1) Connect a stereo generator to the aerial input and set the generator to bilingual.
2) Connect an oscilloscope to TP1802 on PCB 11.
3) Connect a distortion meter to TP1805 on PCB 11.
4) Set the VTR to receive the signal.
5) Adjust CP1802 and CP1805 on PCB11 to maximum output and minimum distortion.

3. Q. Signal detection

1) Connect a stereo generator to the aerial input and set the generator to bilingual.
2) Connect an oscilloscope to TP1804 on PCB 11.
3) Set the VTR to receive the signal.
4) Adjust CP1801 on PCB 11 to maximum output.

4. Sound M.P.X Discriminator signal

1) Connect an oscilloscope to TP1801 on PCB 11.
2) Set the VTR to receive a bilingual signal.
3) Adjust RT1801 and CP1803 on PCB 11 to maximum output (274.1Hz).



5. Stereo discriminator signal

1) Connect an oscilloscope to TP1801 on PCB 11.
2) Set the VTR to receive a stereo signal.
3) Adjust RT1802 on PCB 11 to maximum output (117.5Hz).

6. Stereo signal output level

1) Connect an AF voltmeter to TP1808 on PCB 11.
2) Set the VTR to receive a stereo signal.
3) Press the button SOUND on the secondary operating panel until L2 lights up in the display (only R channel output).
4) Adjust RT 1803 on PCB 11 until the level at TP1808 is 276mV ±22mV.

7. Channel separation

1) Connect a stereo generator to the aerial input. Set the generator to stereo without modulation in the left channel.

2) Connect an oscilloscope to TP1807 on PCB 11.

3) Set the VTR to receive the stereo signal.

4) Adjust RT1804 to minimum output.

6. TUNING CIRCUIT

1. 15.6kHz Free-run

1) Connect a frequency counter to TP802 with ground to TP801 on PCB 11.

2) Set the VTR in stop mode.

3) Adjust RT801 on PCB 11 until a reading of 15.625kHz ±100Hz is obtained.

7. CHARACTER GENERATOR CIRCUIT

1. Character position

1) Connect a TV to the RF OUT socket.

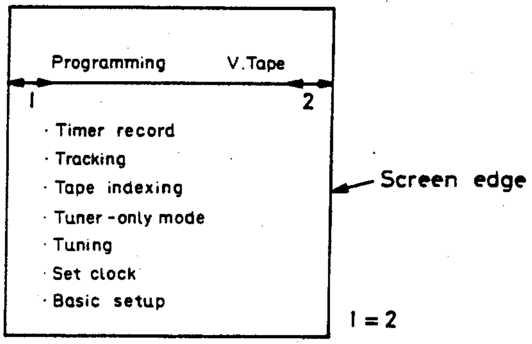
2) Connect a colour bar generator to pin 20 (video in) on the A/V socket.

3) Set the VTR in stop mode.

4) Press the button SOURCE on the secondary operating panel until AUX lights up in the display.

5) Set the VTR to produce a menu display on the TV screen.

6) Adjust RT1401 on PCB 11 until the distances 1 and 2 between the characters and the edges of the screen are equal.



8. SIGNAL SWITCH CIRCUIT

1. Video input level

1) Connect a TV to the RF OUT socket.

2) Connect a colour bar generator to pin 20 (video in) on the A/V connector.

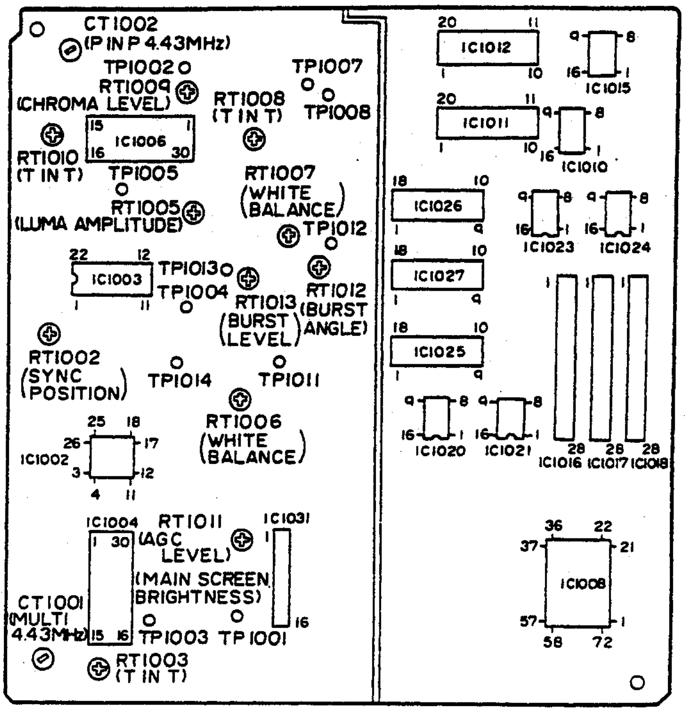
3) Connect an oscilloscope to IC1530 pin 13 on PCB 11.

4) Set the VTR in stop mode.

5) Press the button SOURCE on the secondary operating panel until AUX lights up in the display.

6) Adjust RT1501 on PCB 11 until the level of the video signal is 1Vpp. The brightness of the picture should now be stable.

9. DIGITAL CIRCUIT


CT1002
(P IN P 4.43MHz)
TP1002
RT1009
(CHROMA LEVEL)
TP1007
RT1008
(T IN T)
TP1008
IC1006
RT1010
(T IN T)
TP1005
RT1007
(WHITE BALANCE)
RT1005
(LUMA AMPLITUDE)
TP1012
IC1003
TP1013
TP1004
RT1013
(BURST LEVEL)
RT1012
(BURST ANGLE)
RT1002
(SYNC POSITION)
TP1014
TP1011
RT1006
(WHITE BALANCE)
IC1002
IC1004
RT1011
(AGC LEVEL)
IC1031
(MAIN SCREEN BRIGHTNESS)
CT1001
(MULTI 4.43MHz)
TP1003
TP1001
RT1003
(T IN T)
IC1012
IC1015
IC1011
IC1010
IC1026
IC1023
IC1024
IC1027
IC1025
IC1020
IC1021
IC1016
IC1017
IC1018
IC1008

DIGITAL SIGNAL PROCESSING PCB I

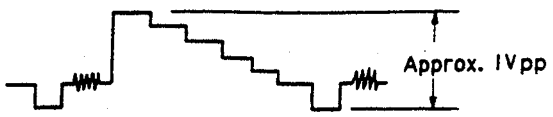
9a set-up:
All digital circuit adjustments must be done with a TV and a colour bar generator connected to the VTR. If a Beovision L/LX 2502/2802 (S/W 2.1 or higher version) or an MX 5000 is used, the VTR can be controlled with a Beolink 1000 terminal via the TV. If another type of TV is used, the VTR can be controlled with a Beolink 1000 and an IR sensor (part no 8915500) connected to the REMOTE CONTROL socket.

In this set-up description, an IR sensor is used.

1) Connect the video output of the colour bar generator to pin 20 on the AV socket on the VTR.
2) Connect the RF output of the colour bar generator to the AERIAL input on the VTR.
3) Connect the RF OUT on the VTR to the arial input on the TV.
4) Connect the IR sensor to the REMOTE CONTROL input on the VTR.
5) Set the colour bar generator to transmit a colour bar signal.
6) Tune the TV to receive the RF signal from the VTR.
7) Tune the VTR (see page 7-10) to receive the RF signal from the colour bar generator.
8) All adjustments must be done with the VTR in stop mode. (NOTE! Time out from stop mode = 8 minutes)
9) Picture-in-picture mode: Press V.TAPE - TV - PICTURE - V.TAPE on the Beolink 1000 before the status line (V.TAPE Play) disappears. There should now be a colour bar picture in both the main and the sub picture.
10) Multi-picture mode: Press PICTURE - STOP on the Beolink 1000. There should now be 4, 9 or 16 small colour bar pictures, depending on the basic set-up.
11) Picture freeze mode: Press STOP on the Beolink 1000. The picture should now show a colour bar and "V.Tape Freeze".
12) To get out of the modes, press ● (ST.BY).

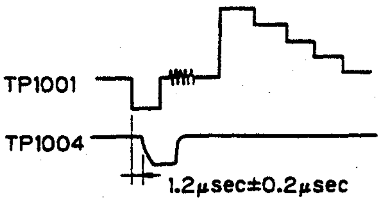
1. AGC Level

1) Connect an oscilloscope to TP1001 on PCB 1.
2) For set-up, see point 9a (Picture-in-picture).
3) Adjust RT1011 on PCB 1 until the amplitude is approx. 1Vpp. The brightness of the sub and the main pictures should match.



2. Sync. Signal position

1) Connect CH1 on an oscilloscope to TP1001 and CH2 to TP1004 on PCB 1.
2) For set-up, see point 9a (Picture-in-picture).
3) Adjust RT1002 on PCB 1 until the leading edge of the sync. signal is 1.2us ±0.2us ahead of the signal on TP1004. The sub-picture should be centred.

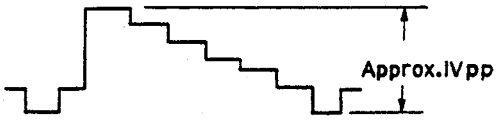


3. 4.43 MHz

1) Set the VTR in multi-picture mode (for set-up, see point 9a).
2) Adjust CT1001 on PCB 1 until the most stable colour is obtained.
3) Set the VTR in picture-in-picture mode (for set-up, see point 9a).
4) Short-circuit TP1002 on PCB 1 to ground.
5) Adjust CT1002 on PCB1 until the most stable colour is obtained.
6) Remove the short-circuit in TP1002.
7) Connect a frequency counter to TP1005 on PCB 1 and make sure that the frequency is 4433.62 ±0.05 kHz.

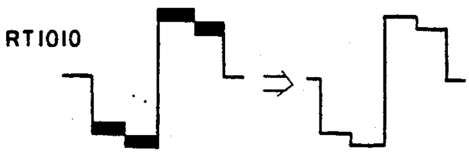
4. Luminance signal amplitude

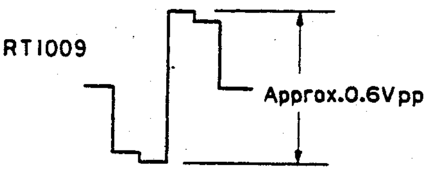
1) Connect an oscilloscope to TP1008 on PCB 1.
2) For set-up, see point 9a (Picture-in-picture).
3) Adjust RT1005 on PCB 1 until the amplitude is approx. 1Vpp. The brightness of the sub and the main pictures should match.



5. Colour saturation (Tint)

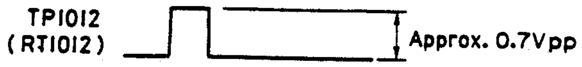
1) Connect an oscilloscope to TP1007 on PCB 1.
2) For set-up, see point 9a (Picture-in-picture).
3) Adjust RT1010 on PCB 1 so that the amplitudes in the top and the bottom are not doubled.
4) Adjust RT1009 on PCB 1 until the amplitude is approx. 0.6Vpp. The colour saturation of the sub and the main pictures should match.

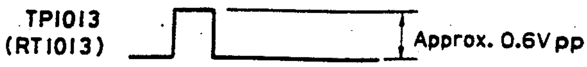




6. Burst level (correct colour in the Multi-picture and Picture-freeze modes)

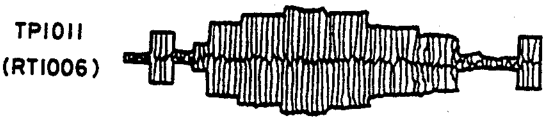
1) Connect an oscilloscope to TP1012 on PCB1.
2) For set-up, see point 9a (Picture-in-picture).
3) Adjust RT1012 on PCB1 until the amplitude is approx. 0.7Vpp.
4) Connect an oscilloscope to TP1013 on PCB1.
5) Adjust RT1013 on PCB1 until the amplitude is approx. 0.6Vpp.

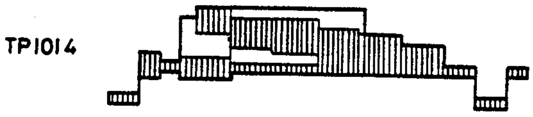

TP1012
(RT1012)
Approx. 0.7Vpp


TP1013
(RT1013)
Approx. 0.6Vpp

7. White balance

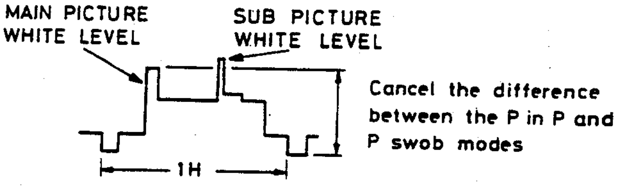
1) Connect CH1 on an oscilloscope to TP1011 and CH2 to TP1014 on PCB1. Trigger on CH2.
2) For set-up, see point 9a (Picture-freeze).
3) Adjust RT1006 on PCB 1 to minimum chroma signal on TP1011.
4) Adjust RT1007 on PCB1 to obtain the same colour during picture-freeze and loop-through picture. Using Beolink 1000, switch between loop-through picture and picture-freeze: STOP = picture-freeze, PLAY = loop-through picture.


TP1011
(RT1006)



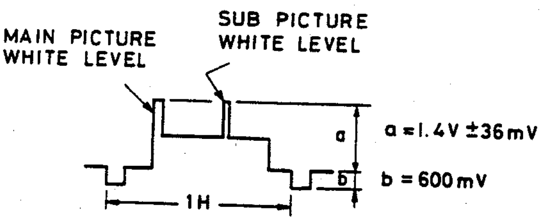
8. AGC level (Fine-adjustment)

1) Connect an oscilloscope to TP1014 on PCB 1.
2) For set-up, see point 9a (Picture-in-picture)
3) Adjust RT1011 on PCB1 until the brightness of the sub-picture matches the brightness of the main picture during picture swap. The white colour of the main picture and the sub-picture should match.
   Picture swap: Press 0.


MAIN PICTURE WHITE LEVEL
SUB PICTURE WHITE LEVEL
Cancel the difference between the P in P and P swob modes
1H

9. Sub-picture brightness

1) Connect an oscilloscope to TP1014 on PCB1.
2) For set-up, see point 9a (Picture-in-picture).
3) Adjust RT1005 on PCB1 until the brightness of the sub-picture matches the brightness of the main picture.
   White level: a = 1.4V ±36mV.


MAIN PICTURE WHITE LEVEL
SUB PICTURE WHITE LEVEL
a
b
a = 1.4V ±36mV
b = 600mV
1H

10. Main/sub-picture colour matching

1) For set-up, see point 9a (Picture-in-picture).
2) Adjust RT1003, RT1008 and RT1009 on PCB1 until the colours of the sub-picture matches those of the main picture.

11. Loop-through/Picture-freeze picture colour matching

1) For set-up, see point 9a (Picture-freeze).

2) While switching between loop-through picture and picture-freeze using Beolink 1000 (PLAY = loop-through picture, STOP = picture-freeze), adjust RT1012 and RT1013 on PCB1 until the colours of the loop-through picture matches those of the picture-freeze picture.

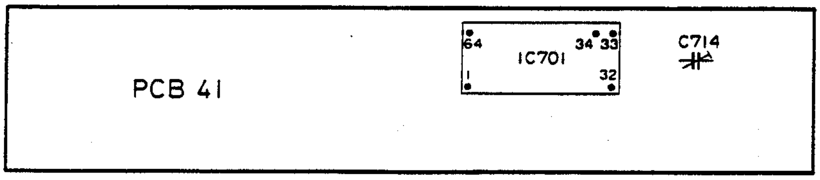
10. TIMER CIRCUIT

1. 32.768 kHz Osc.

1) Connect a frequency counter to pin 34 on IC701 with ground to pin 32 on IC701 on PCB 41. Use a 1:10 probe.

2) Set the VTR in stop mode.

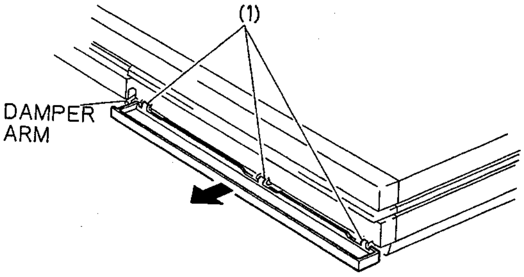
3) Adjust C714 on PCB 41 until a reading of 32.768 kHz is obtained. Use a non-conductive tool for the adjustment because stray capacitance may make the frequency vary.



DISASSEMBLY

I. REMOVING THE CABINET PARTS

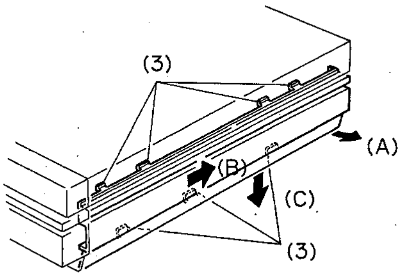
1. **Preset panel**
2. **Side panels (L), (R)**
3. **Top cover**
4. **Bottom cover**
5. **Front panel**
6. **Damper assembly**
7. **Cassette door**
8. **Rear panel (centre)**
9. **Rear panels (L), (R)**



1. Preset panel

(1) Open the preset panel and pull it outwards in the horizontal state to release the three taps.

* When reinstalling the panel, make sure that the tap at the left end of the preset panel is inserted into the groove on the damper arm.



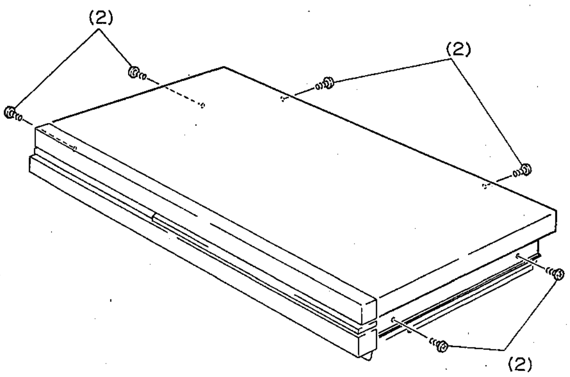
2. Side panels (L), (R)

(1) Pull the rear bottom-end of the side panel in the direction of arrow (A).

(2) Slide the entire side panel in the direction of arrow (B).

(3) Slide the entire side panel in the direction of arrow (C) to release the seven retainers and remove the side panel.

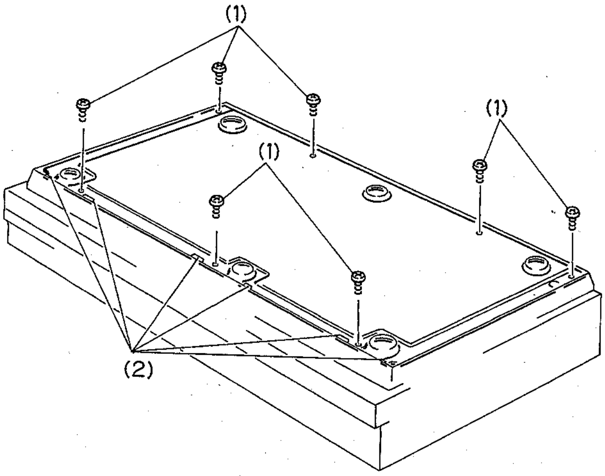
* The illustration shows side panel (R) removed. Remove side panel (L) in the same way.



3. Top cover

(1) Remove the side panels (L) and (R) (see item I-2).

(2) Remove the six screws.



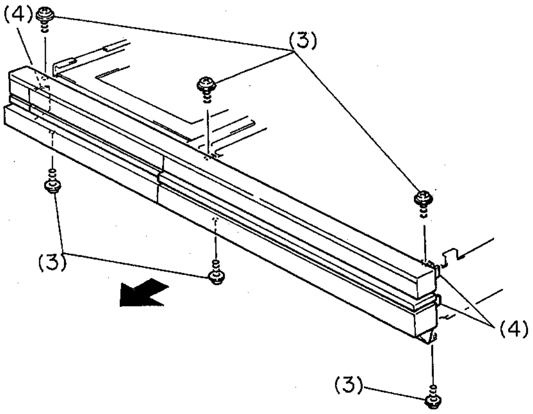
4. Bottom cover

(1) Remove the seven screws.

(2) Lift the rear end of the bottom cover and slide the cover backwards to release the six taps located at the front panel.

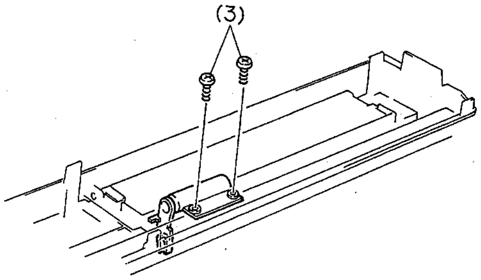
5. Front panel

(1) Remove the side panels (L) and (R) (see item I-2).
(2) Remove the top and bottom covers (see items I-3 and I-4).
(3) Remove the three screws from the top and the three screws from the bottom.
(4) Release the four retainers in the left and right hand-side and pull the front panel outwards.
* Reinstall the front panel while holding the cassette door open.



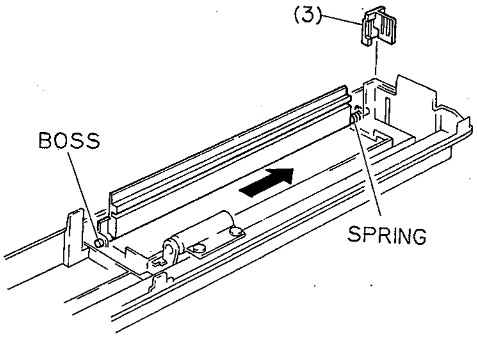
6. Damper assembly

(1) Remove the side panels (L) and (R) (see item I-2).
(2) Remove the top and bottom covers and the front panel (see items I-3 to 5).
(3) Remove the two screws retaining the damper from the back-side of the front panel.
* Make sure that the tap of the preset panel is inserted into the groove on the damper arm.



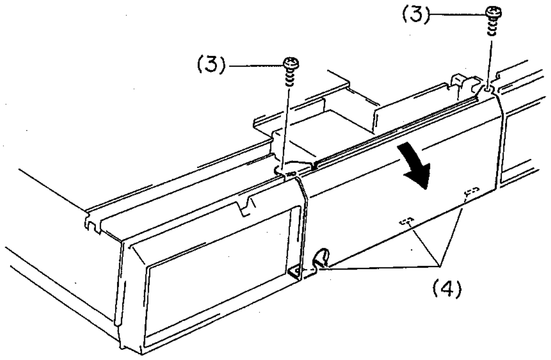
7. Cassette door

(1) Remove the side panels (L) and (R) (see item I-2).
(2) Remove the top and bottom covers and the front panel (see items I-3 to 5).
(3) Remove the cassettedoor slide preventive-block from the back-side of the front panel.
(4) Open the cassette door and slide it in the direction of the arrow to release the tap opposite the spring, then remove the door.



8. Rear panel (centre)

(1) Remove the side panels (L) and (R) (see item I-2).
(2) Remove the top and bottom covers (see items I-3 and I-4).
(3) Remove the two screws.
(4) Pull the top of the rear panel outwards to release the three retainers at the bottom.



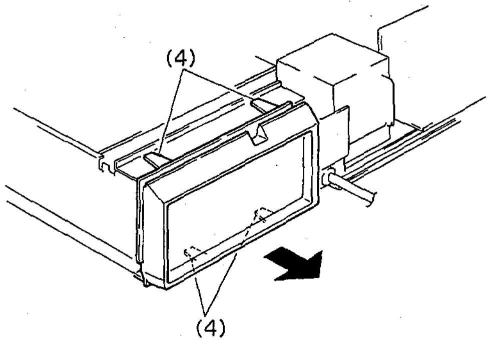
9. Rear panels (L), (R)

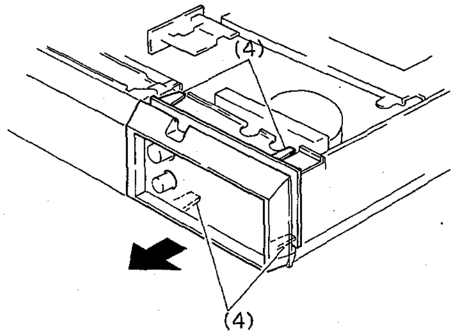
(1) Remove the side panels (L) and (R) (see item I-2).

(2) Remove the top and bottom covers (see items I-3 and I-4).

(3) Remove the rear panel (centre) (see item I-8).

(4) Release the two retainers at the top and the two retainers at the bottom and pull the rear panel outwards.

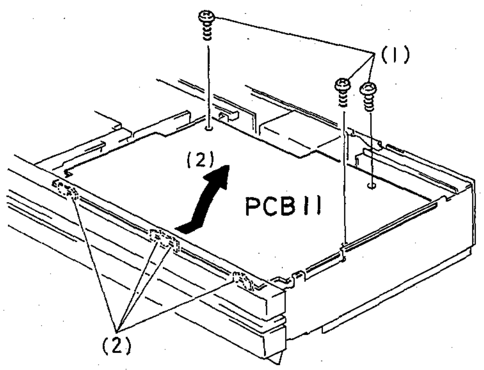




II. HOW TO PUT THE PCB's IN SERVICE POSITION

1. Y/Chroma & Signal switch	**PCB 11**
2. Main (Servo, Hi-Fi Audio & System control)	**PCB 21**
3. Operation control	**PCB 41**
4. Digital signal processing	**PCB 1**
5. Remote, Switch & OSD Control	**PCB 51**
6. Rectifier & 5V/12V Power supply	**PCB 61 & 62**
7. Input socket panel, rear	**PCB 31**
8. RF signal	**PCB 24**
9. Sensor	**PCB 6**

Before setting the PCB's in service position or removing them, the side panels (L) and (R) and the top and bottom covers must be removed (see item I-2, I-3 and I-4).

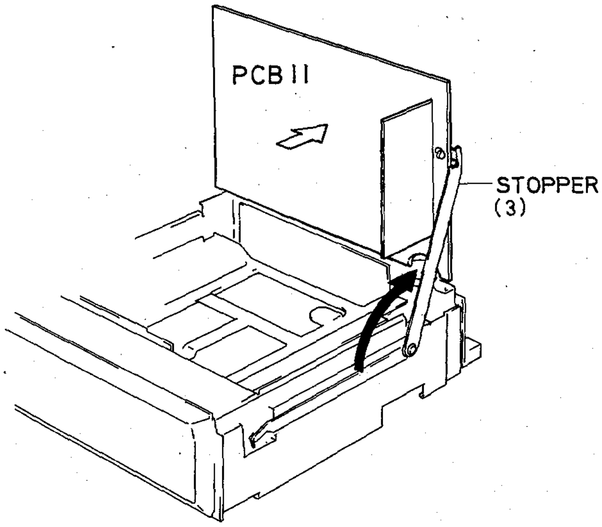


1. Y/Chroma & Signal switch, PCB 11

(1) Remove the three screws.

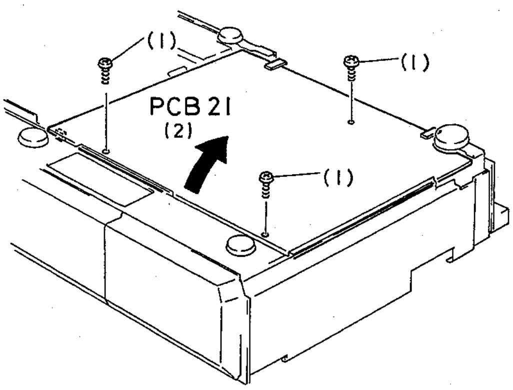
(2) Pull PCB 11 backwards to release the engagements at the front, then open PCB 11.

(3) Place the lower edge of PCB 11 against the two taps on the righthand side of the rear panel, and attach the stopper to the hole on PCB 11.



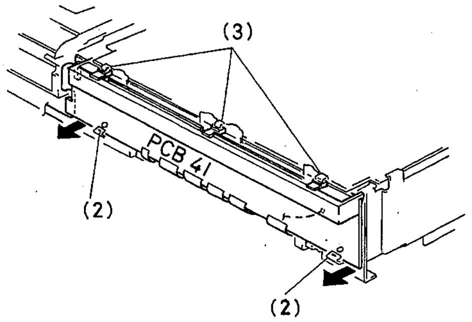
2. Main (Servo, Hi-Fi Audio & System Control, PCB 21

(1) Remove the three screws.
(2) Open PCB 21 and release the two cable binders for further opening of PCB 21.



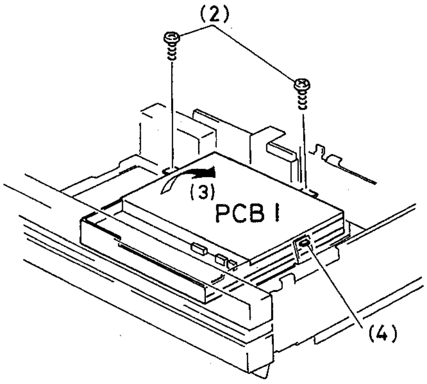
3. Operation control, PCB 41

(1) Remove the front panel (see item I-5).
(2) Release the two taps at the bottom of PCB 41 and pull PCB 41 in the direction of the arrows.
(3) Release the three engagements at the top of PCB 41 and pull PCB 41 outwards.



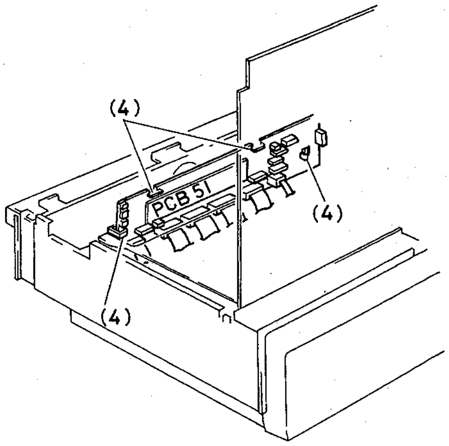
4. Digital signal processing, PCB 1

(1) Open Y/Chroma & Signal switch PCB 11 (see item II-1).
(2) Remove the two screws.
(3) Lift PCB 1 in the direction of the arrow.
(4) Release the engagement at the righthand side of PCB 1. PCB 1 can now be taken out of the set and placed on e.g. the tape mechanism.



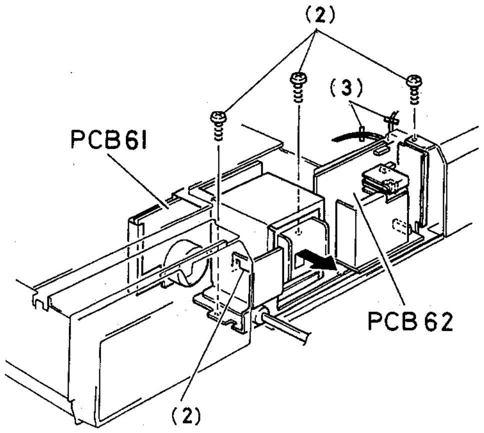
5. Remote, Switch & OSD control PCB 51

(1) Set Y/Chroma & Signal switch PCB 11 in service position (see item II-1).
(2) Remove the three screws for the Main (Servo, Hi-Fi Audio & System switch) PCB 21 (see item II-2).
(3) Set the Digital signal processing PCB 1 in service position (see item II-4).
(4) Release the two stoppers and push PCB 51 downwards to release the two engagements at the top.



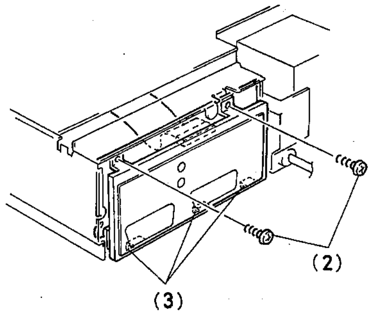
6. Rectifier & 5V/12V Power supply, PCB 61 & 62

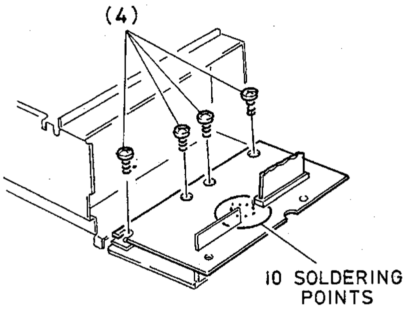
(1) Remove the rear panel (centre) (see item I-8).
(2) Remove the three screws and lift PCB 61& 62 in the direction of the arrow to release the hook.
(3) Release the wire bundles for PCB 62 from the wire holders and lift out PCB 61 & 62.



7. Input socket panel, rear PCB 31

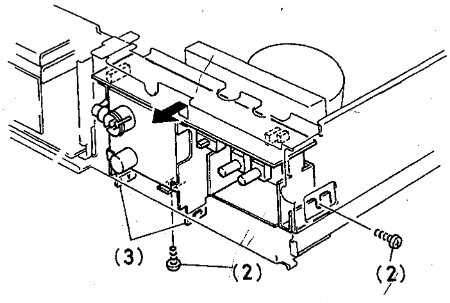
(1) Remove the rear panel (centre) and the rear panel (R) (see item I-8, I-9).
(2) Remove the two screws.
(3) Pull the top of PCB 31 backwards and lift it up to release the three hooks at the bottom.
(4) To remove PCB 31 from the back cover, remove the four screws. Then desolder the ten soldering points.





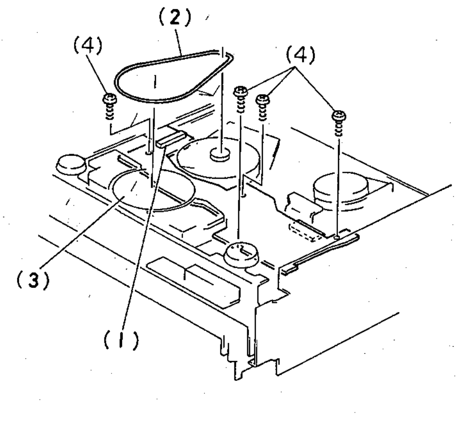
8. RF signal, PCB 24

(1) Remove the rear panel (centre) and the rear panel (L) (see item I-8, I-9)
(2) Remove the two screws.
(3) Release the two taps on the PCB 24 chassis from the main chassis.

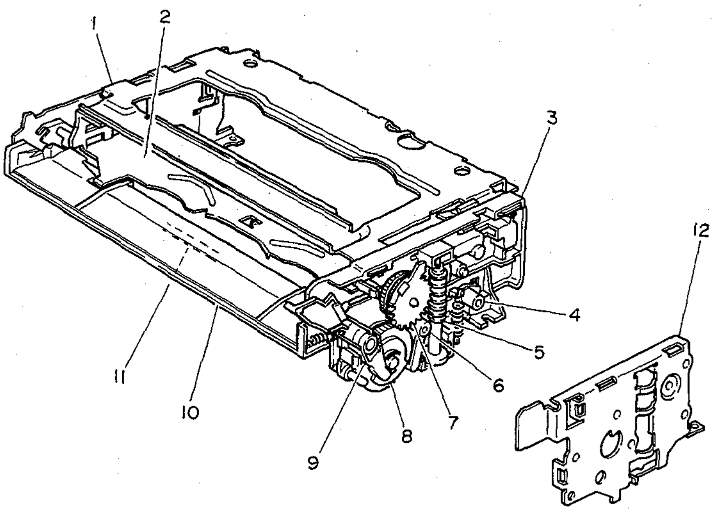


9. Sensor, PCB 6

(1) Disconnect the flat cable from PCB 6.
(2) Remove the reel belt.
(3) Remove the take-up reel.
(4) Remove the four screws.



Cassette-loading mechanism


1
2
3
12
4
5
6
7
8
9
10
11

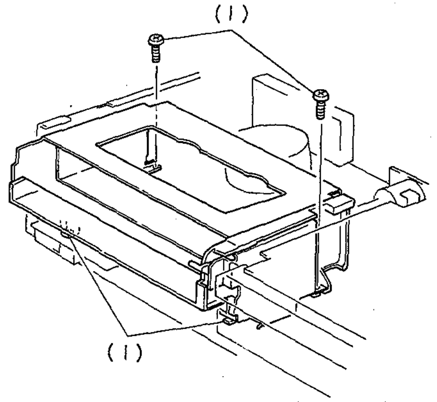
1. Chassis holder
2. Cassette holder
3. Gear bracket
4. Switch lever B
5. FL worm gear
6. Switch lever A
7. Worm wheel
8. Drive gear
9. Door arm
10. Front holder
11. Shaft pin
12. Side chassis

III. REMOVING THE MECHANICAL PARTS IN THE CASSETTE-LOADING MECHANISM

1. **Cassette-loading mechanism**
2. **Loading-gear assembly, Chassis holder, Cassette holder assembly and Front holder**
3. **Cassette holder base and Cassette holders (L/R)**
4. **Loading gear**

1. Cassette-loading mechanism

(1) Remove the two screws and lift up the rear-end of the cassette loading mechanism and release the two hooks at the bottom front.



2. Loading-gear assembly, Chassis holder, Cassette holder assembly and Front holder

Loading Gear Assembly

(1) Release the two taps that engage with the chassis holder and the tap that engage with the front holder. Then remove the loading gear assembly.

Chassis holder

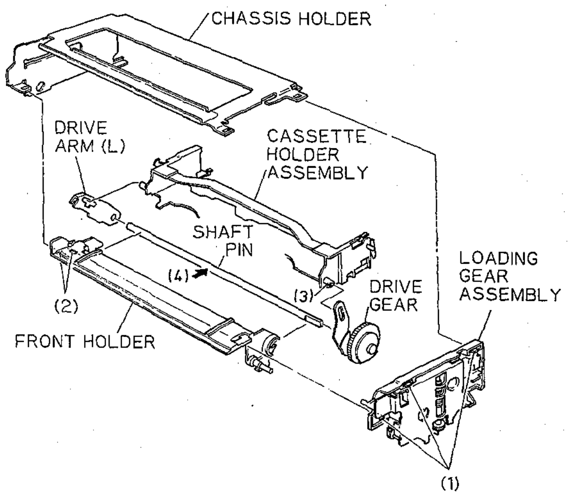
(2) Release the two taps that engage with the front holder.

Cassette holder assembly

(3) Remove the drive gear. Then remove the cassette holder assembly.

Front Holder

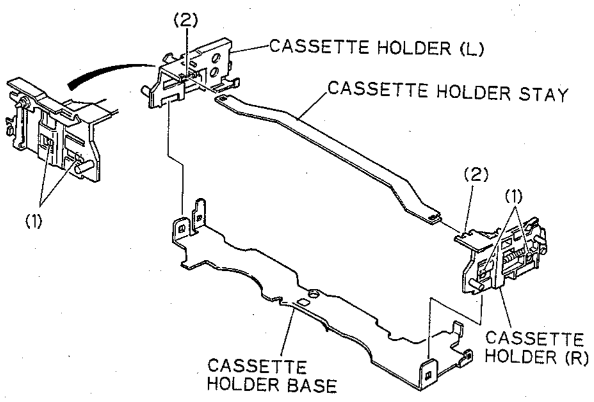
(4) Remove the shaft pin and the drive arm (L).


CHASSIS HOLDER
DRIVE ARM (L)
CASSETTE HOLDER ASSEMBLY
SHAFT PIN
(4)
(3)
DRIVE GEAR
LOADING GEAR ASSEMBLY
(2)
FRONT HOLDER
(1)

3. Cassette holder base and Cassette holders (L) and (R)

Cassette holder base
(1) Release the four taps on the cassette holders (L) and (R).

Cassette holders (L) and (R)
(2) Release the taps on the cassette holders (L) and (R) and pull the holders outwards.


(2)
CASSETTE HOLDER (L)
CASSETTE HOLDER STAY
(2)
(1)
(1)
CASSETTE HOLDER (R)
CASSETTE HOLDER BASE

---

4. Loading gear

Side chassis, FL Worm gear, Door arm, Worm wheel and Switch levers (A) and (B)

Side chassis
(1)* Release the three taps that engage with the loading gear assembly.

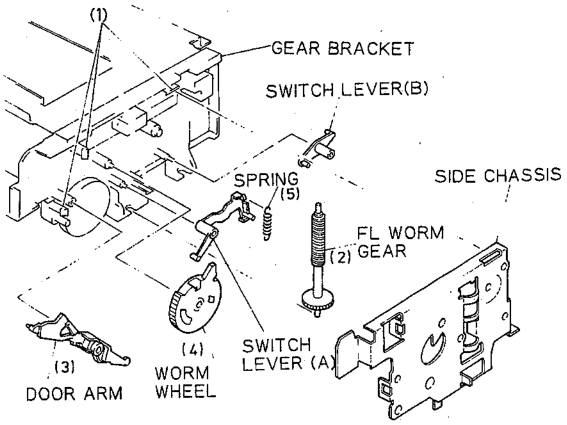
FL Worm gear
(2) Remove the FL worm gear.

Door arm
(3) Remove the door arm.

Worm wheel
(4) Remove the worm wheel

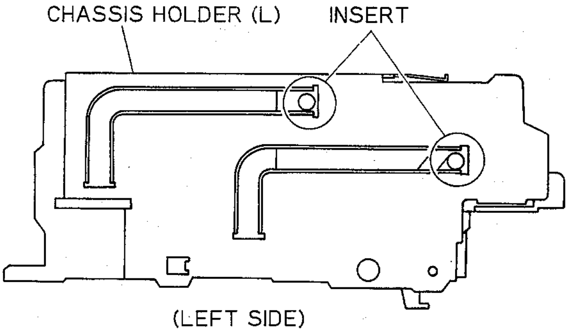
Switch levers (A) and (B)
(5) Remove the spring between the switch lever (A) and the gear bracket.

(6) Remove the switch levers (A) and (B).

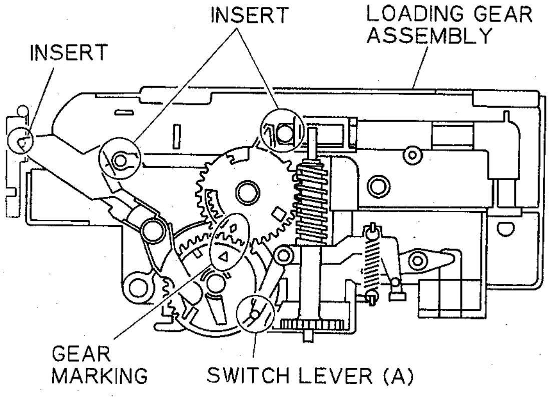

(1)
GEAR BRACKET
SWITCH LEVER(B)
SIDE CHASSIS
SPRING
(5)
FL WORM GEAR
(2)
(3)
DOOR ARM
(4)
WORM WHEEL
SWITCH LEVER (A)

(Cautions during reinstallation)
Reinstall the components using the removal procedure in reverse order. Pay special attention to the following items:

- * Make sure that the two taps of the cassette holder are inserted in the grooves on the left hand-side of the chassis holder.
- * When reinstalling the loading gear assembly, make sure that the two taps of the cassette holder are inserted in the grooves on the right hand-side of the chassis holder.
- * Check that the marking (△) on the synchro gear and the marking (◇) on the clutch gear are aligned.
- * Make sure that the tap of cassette switch lever (A) is in contact with the cam of the synchro gear.
- * When reinstalling the cassette door, make sure that the tap of the door arm is inserted in the groove in the cassette door.

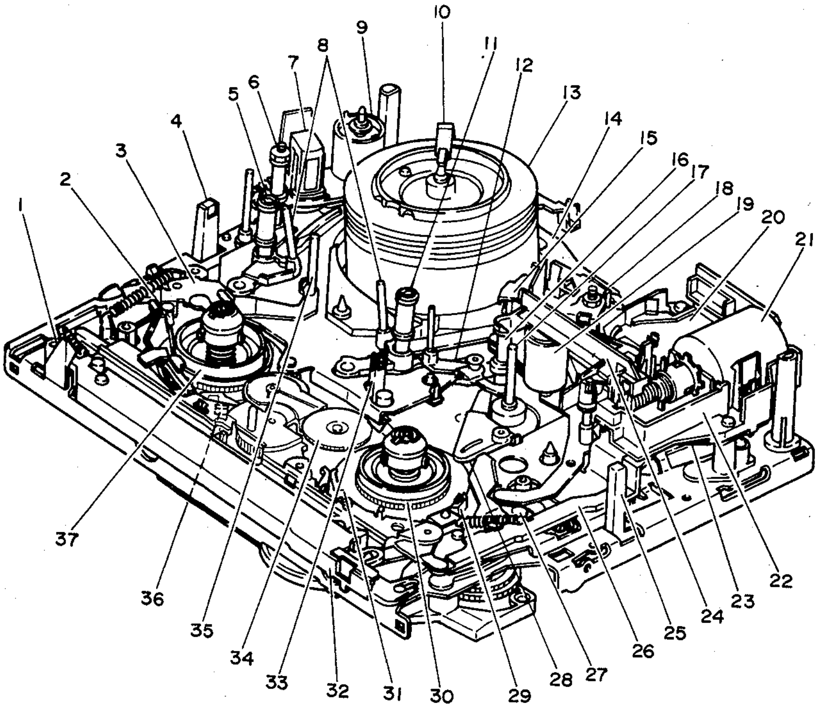

CHASSIS HOLDER (L)
INSERT

(LEFT SIDE)

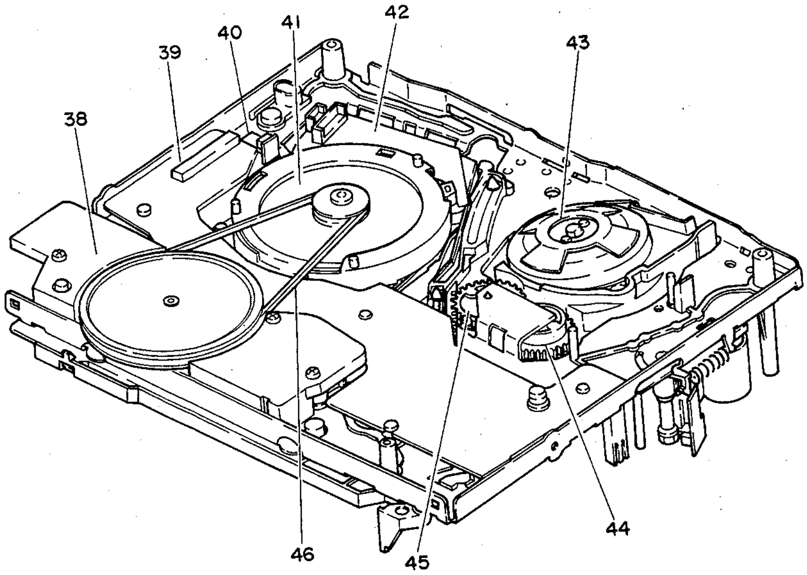

INSERT
INSERT
LOADING GEAR ASSEMBLY
GEAR MARKING
SWITCH LEVER (A)

(RIGHT SIDE)

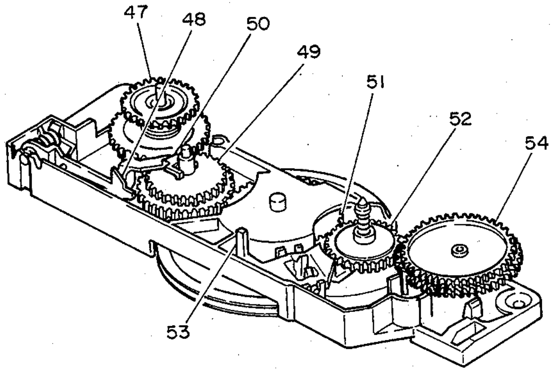
Top view of mechanism



Bottom view of mechanism



Cluth base



1. Safety arm
2. Tension band assembly
3. Tension arm
4. Supply reel sensor
5. Supply guide roller
6. Supply guide pole
7. Full erase head
8. Inclined guide
9. Impedance roller
10. Static discharge brush
11. Take-up guide roller
12. Half threading in arm
13. Cylinder motor assembly
14. Cylinder base
15. Audio/control (A/C) head
16. Take-up pole
17. Capstan shaft
18. Dew sensor
19. Pressure roller assembly
20. Mechanism state switch
21. Threading in/out motor assembly
22. Threading in/out motor holder
23. Threading in/out bracket
24. Cassette lid opener
25. Take-up reel sensor
26. Brake link arm
27. Pressure roller operation arm
28. Relay arm
29. Take-up brake assembly
30. Take-up reel disk
31. Take-up main brake
32. Slider block assembly
33. End lamp
34. Reel drive idler
35. Tension pole
36. Supply main brake
37. Supply reel disk
38. Clutch base assembly
39. Sensor PCB
40. Diode
41. Capstan motor
42. Capstan motor PCB
43. Cylinder motor assembly
44. Supply threading in/out gear
45. Take-up threading in/out gear
46. Reel belt
47. Take-up gear
48. Clutch arm
49. Change gear
50. Change arm
51. Take-up pulley
52. Fl change gear
53. Fl change arm
54. Relay gear

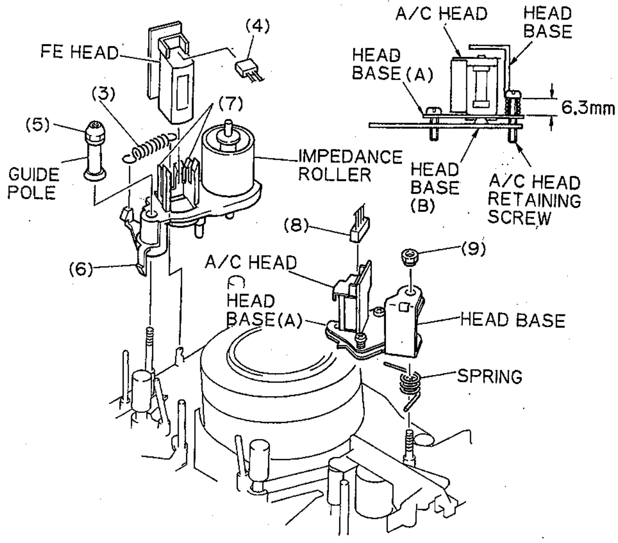
IV. REMOVING THE MAIN MECHANICAL PARTS

1. **Impedance roller/FE (Full Erase) head, A/C (Audio/Control) head**
2. **Cylinder motor assembly**
3. **Capstan flywheel motor**
4. **Threading in/out motor/mechanism state-switch assembly and Dew Sensor**
5. **Tension arm/Tension band**
6. **Slider block, Reel drive gear**
7. **Supply/Take-up reel disk, Half-threading in arm and Relay arm**
8. **Pressure roller, Supply guide pole, Take-up guide pole and Supply/Take-up guide rollers**
9. **Threading in/out motor assembly, Brake link arm and FS Brake arm**
10. **Threading in/out bracket assembly and Take-up brake**
11. **Brake operation arm, Mode gear, Worm wheel, Pressure-roller operation arm, Mode change arm and Brake lift arm**
12. **Cylinder-motor base and Supply/Take-up threading in/out arms**
13. **Take-up pulley and Clutch gear assembly**
14. **Take-up gear, Change arm, Change gear, FL Change gear and FL Change lever**

1. Impedance roller/FE (Full Erase) head

(1) Remove the side panels (L) and (R) (see item I-2).
(2) Remove the top cover (see item I-3).
(3) Remove the spring between the FE head base and the chassis.
(4) Disconnect the connector.
(5) Remove the nut retaining the guide pole and remove the pole.
(6) Release the tap and remove the impedance roller/FE head.
(7) To remove the FE head, release the two taps and pull the FE head upwards.

A/C (Audio/Control) head
(8) Disconnect the connector.
(9) Remove the nut which retains the head base and pull the base upwards and outwards.
* Hook the bottom of the spring located under the head base to the chassis. Then hook the top of the spring to the stopper of the head base.



(Cautions during reinstallation)
* Make sure that the spring section of the A/C head retaining screw protrudes 6.3 mm above head base (A).
* Make sure that the head bases (A) and (B) are parallel.

(Adjustments after reinstallation)
A/C head, X value, Audio playback level and Audio bias level.

2. Cylinder-motor assembly

(1) Remove the side panels (L) and (R) (see item I-2).
(2) Remove the top cover (see item I-3).
(3) Remove the screw and the earth brush.
(4) Pull out the preamp./rec. amp. circuit board.

(Bottom Side)
(5) Remove the bottom cover (see item I-4).
(6) Disconnect the connector from the cylinder-motor circuit board.
(7) Remove the three screws holding the cylinder (bottom side).
(8) Pull the cylinder-motor assembly outwards and upwards.

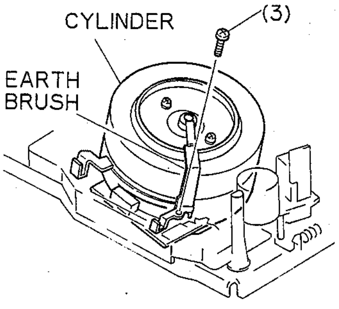
(Cautions during work)

* Place the unit on the side as the screws are in the reverse positions to the direction in which the cylinder is removed.

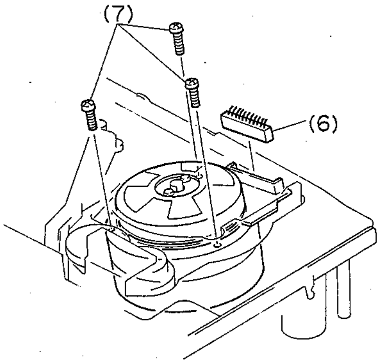
* Do not touch the video head tips with fingers or tools.

(Adjustment after reinstallation)

. Adjustments after replacing the cylinder.



TOP VIEW

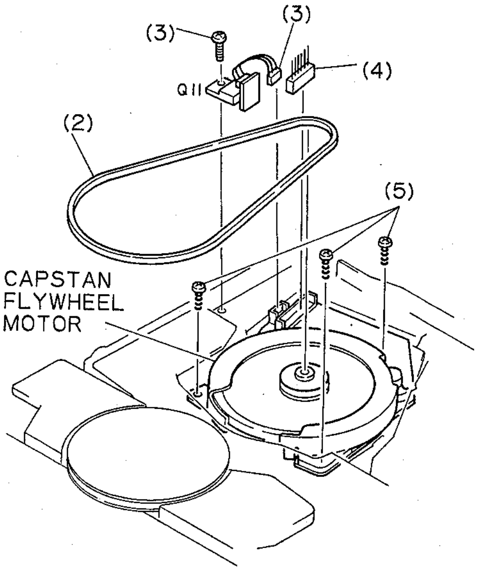


BOTTOM VIEW

3. Capstan flywheel motor

(1) Remove the bottom cover (see item I-4).
(2) Remove the reel belt.
(3) Remove the screw and disconnect the connector, then remove Q11.
(4) Disconnect the connector.
(5) Remove the three screws and then remove the capstan flywheel motor.

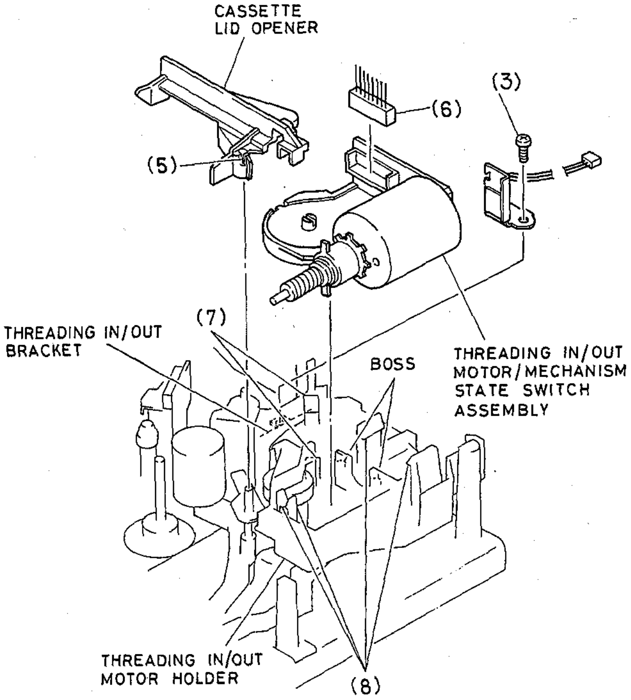
* Keep the capstan shaft clean when removing and reinstalling the capstan flywheel motor.



4. Threading in/out motor/mechanism state-switch assembly and Dew sensor

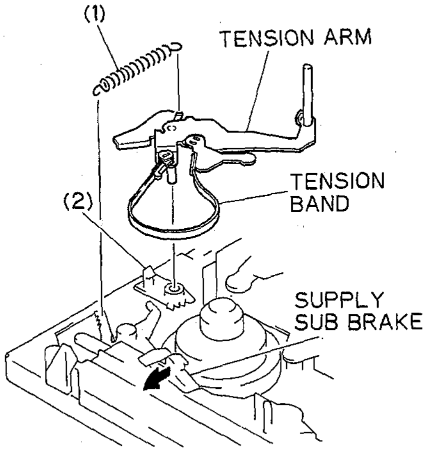
(1) Remove the side panels (L) and (R) (see item I-2).
(2) Remove the top cover (see item I-3).
(3) Remove the screw, pull the dew sensor outwards.
(4) Remove the digital 5 V power supply PCB12.
(5) Release the tap and remove the cassette lid opener.
(6) Disconnect the connector.
(7) Release the two taps holding the mechanism state-switch.
(8) Release the four taps. Release the two bosses of the motor holder from the screw holes in the motor and simultaneously lift up the threading in/out motor/mechanism state-switch assembly.

* Items 5 to 14 listed below will be described as if the side panels (L) and (R), the top and bottom covers, the front panel and the cassette loading mechanism have already been removed. (See items I-2, I-3, I-4, I-5 and III-1).


CASSETTE LID OPENER
(3)
(6)
(5)
(7)
THREADING IN/OUT BRACKET
BOSS
THREADING IN/OUT MOTOR/MECHANISM STATE SWITCH ASSEMBLY
THREADING IN/OUT MOTOR HOLDER
(8)

5. Tension Arm/Tension Band

(1) Remove the spring between the tension arm and the spring holder.
(2) Release the fitting with the tension arm. Move the supply sub brake in the direction of the arrow and remove the tension band and tension arm.


(1)
TENSION ARM
TENSION BAND
(2)
SUPPLY SUB BRAKE

6. Slider block and Reel drive gear

(1) Remove the two screws.

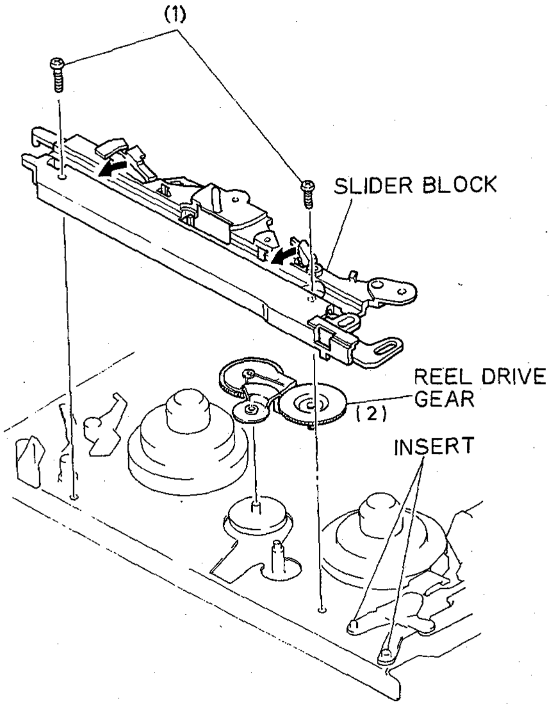
(Cautions during reinstallation)

* Reinstall the slider block while pressing both the sub brake and the supply main brake in the direction of the arrows.

* Make sure that the bosses of the load bracket assembly are inserted in the sliders.

Reel drive gear

(2) Remove the reel drive gear from the take-up gear shaft.


(1)
SLIDER BLOCK
REEL DRIVE GEAR
(2)
INSERT

7. Supply/Take-up reel disks, Half-threading in/out arm and Relay arm

(1) Remove the slider block (see item IV-6).
(2) Remove the tension arm and the tension band (see item IV-5).
(3) Remove the supply reel disk.

(Caution during reinstallation)
* Make sure that the washer is put on the reel disk installation shaft.

(Adjustments after reinstallation)
* Tension pole position and Tension adjustments. Reel disk height adjustment.

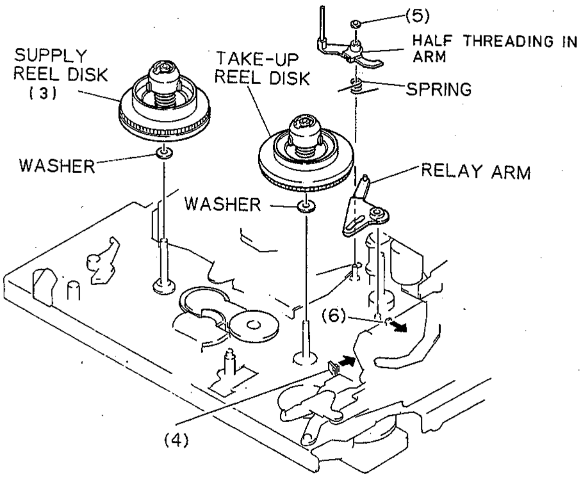
Take-up reel disk
(4) Move the take-up brake in the direction of the arrow and remove the take-up reel disk.

(Caution during reinstallation)
* Make sure that the washer is put on the reel disk installation shaft.

(Adjustments after reinstallation)
* Reel disk height adjustment.

Half-threading in arm
(5) Remove the washer and pull the arm outwards and upwards.
* Hook the bottom of the spring located under the half-threading in arm to the stopper of the take-up guide pole. Then hook the top of the spring to the stopper of the half-threading in arm.

Relay arm
(6) Move the stopper in the direction of the arrow and remove the relay arm.


(5)
HALF THREADING IN ARM
SUPPLY REEL DISK (3)
TAKE-UP REEL DISK
SPRING
WASHER
RELAY ARM
WASHER
(6)
(4)

8. Roller and Guide

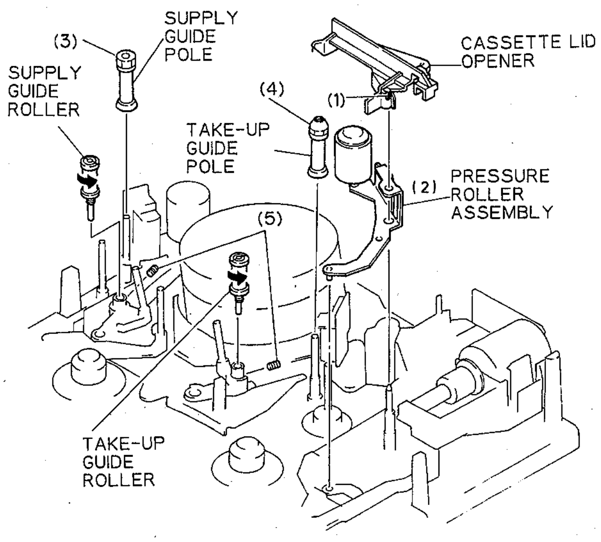
Pressure roller
(1) Release the tap and remove the cassette lid opener.
(2) Remove the pressure roller.

(Cautions during reinstallation)
* Make sure that the pin of the pressure roller is inserted in the hole in the pressure-roller operation arm.
* Clean the tape contact surface of the pressure roller.

Supply guide pole
(3) Loosen the guide pole retaining-screw and then remove the guide pole.

(Caution during reinstallation)
* Clean the tape contact surface of the guide pole.

(Adjustment after reinstallation)
Guide pole height adjustment.


(3)
SUPPLY GUIDE POLE
CASSETTE LID OPENER
SUPPLY GUIDE ROLLER
(4)
(1)
TAKE-UP GUIDE POLE
(2)
PRESSURE ROLLER ASSEMBLY
(5)
TAKE-UP GUIDE ROLLER

Take-up guide pole

(4) Loosen the take-up guide pole retaining screw and then remove the guide pole.

(Caution during reinstallation)

* Clean the tape contact surface of the guide pole.

(Adjustment after reinstallation)

Guide pole height adjustment.

Supply/Take-up guide rollers

* Remove the supply and the take-up guide rollers following the same procedure.

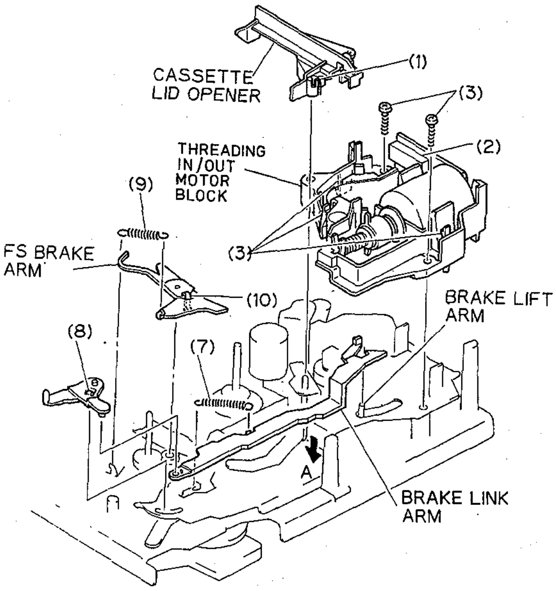
(5) Loosen the guide roller retaining hexagonal-screws.

(6) Turn the guide roller anticlockwise to remove it.

(Adjustment after reinstallation)

Guide roller height adjustment.

9. Threading in/out motor block assembly, Brake link arm and FS Brake arm



Threading in/out motor Block assembly

(1) Release the tap and remove the cassette lid opener.

(2) Disconnect the connector from the threading in/out motor circuit board.

(3) Remove the two screws and release the three taps.

(4) Remove the threading in/out motor and the motor holder while holding the section indicated by the arrow (A) so that the threading in/out bracket assembly does not lift.

(Adjustment after reinstallation)

Mechanism state-switch adjustment

Brake link arm

(5) Remove the slider block (see item IV-6).

(6) Remove the take-up reel disk (see item IV-7).

(7) Remove the spring between the brake link arm and the threading in/out bracket.

(8) Release the tap of the brake lift arm and remove the brake link arm.

FS Brake arm

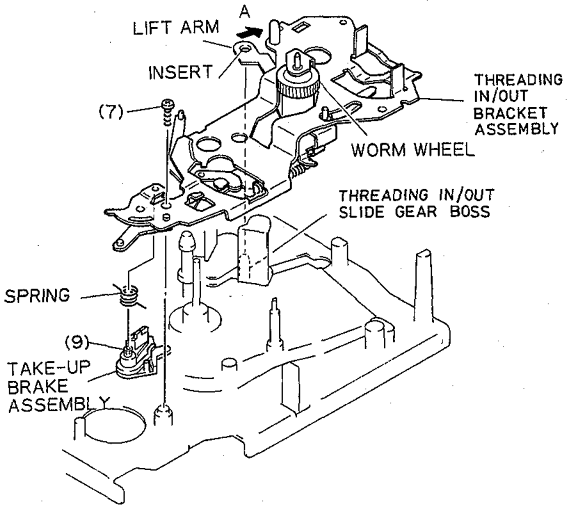
(9) Remove the spring between the FS brake arm and the mechanism chassis.

(10) Release the tab and then remove the FS brake arm.

10. Threading in/out bracket assembly and Take-up brake

Threading in/out bracket assembly
(1) Remove the dew sensor (see item IV-4).
(2) Remove the slider block (see item IV-6).
(3) Remove the take-up reel disk (see item IV-7).
(4) Remove the pressure roller (see item IV-8).
(5) Remove the threading in/out motor block (see item IV-9).
(6) Remove the brake link arm (see item IV-9).
(7) Remove the screw and draw the tap of the threading in/out slide gear through the hole in the lift arm to lift the assembly upwards.

Take-up brake
(8) Remove the brake operation arm (see item IV-11).
(9) Release the tap and remove the take-up brake.
* Item 11 below will be described as if the threading in/out bracket assembly has already been removed.


A
LIFT ARM
INSERT
(7)
THREADING IN/OUT BRACKET ASSEMBLY
WORM WHEEL
THREADING IN/OUT SLIDE GEAR BOSS
SPRING
(9)
TAKE-UP BRAKE ASSEMBLY

11. Brake operation arm, Mode gear, Worm wheel, Pressure-roller operation arm, Mode change arm and Brake lift arm

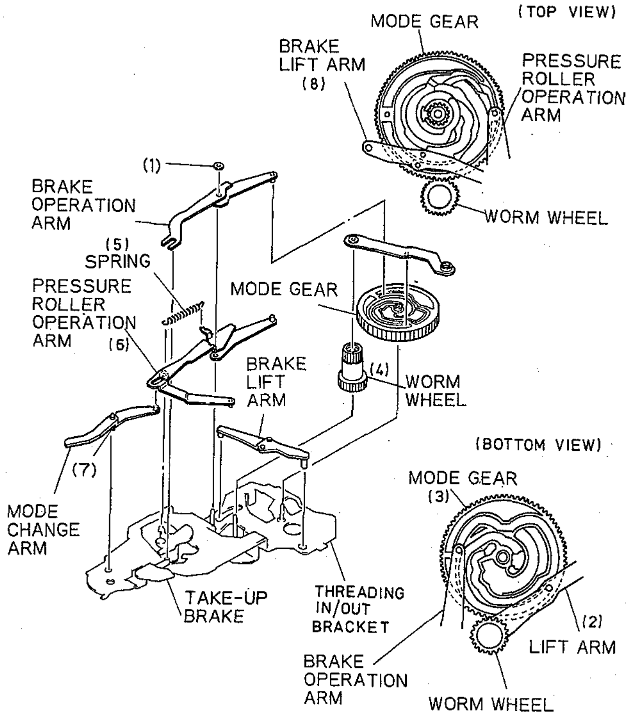
Brake operation arm
(1) Remove the washer and then remove the brake operation arm.

Mode Gear
(2) Remove the lift arm.
(3) Remove the mode gear.

Worm Wheel
(4) Remove the worm wheel.

Pressure-roller operation arm, Mode change arm
(5) Remove the spring between the pressure-roller operation arm and the load bracket.
(6) Remove the pressure-roller operation arm.
(7) Release the tap and then remove the mode change arm.

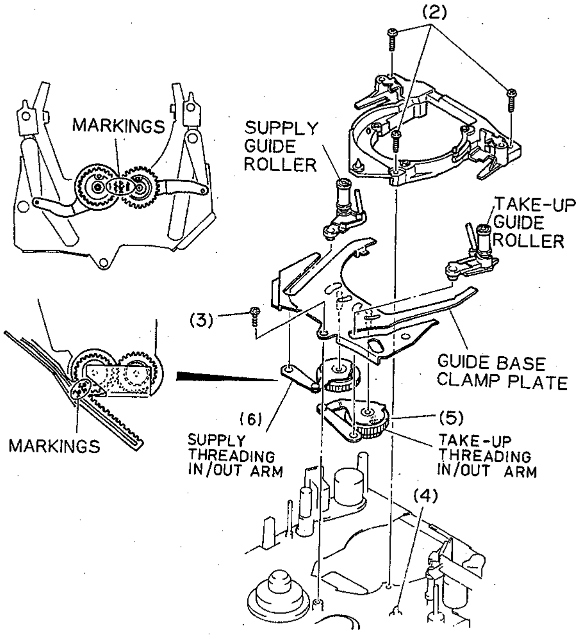
Brake lift arm
(8) Remove the brake lift arm.


MODE GEAR
(TOP VIEW)
BRAKE LIFT ARM (8)
PRESSURE ROLLER OPERATION ARM
WORM WHEEL
(1)
BRAKE OPERATION ARM
(5) SPRING
PRESSURE ROLLER OPERATION ARM (6)
MODE GEAR
BRAKE LIFT ARM
(4)
WORM WHEEL
(BOTTOM VIEW)
MODE GEAR (3)
(7)
MODE CHANGE ARM
TAKE-UP BRAKE
THREADING IN/OUT BRACKET
(2)
LIFT ARM
BRAKE OPERATION ARM
WORM WHEEL

12. Cylinder-motor base and Supply/Take-up threading in/out arms

Cylinder-motor base
(1) Remove the cylinder-motor assembly (see item IV-2).
(2) Remove the three screws and then remove the cylinder-motor base.

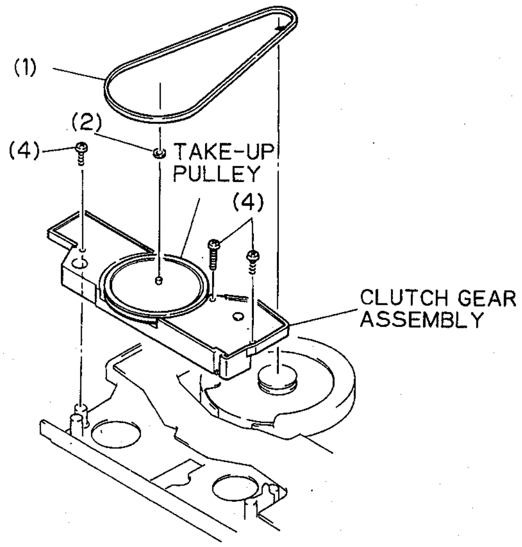
Supply/Take-up threading in/out arms
(3) Remove the screw.
(4) Release the tap and remove the guide-base clamp-plate with the supply/take-up guide rollers assembled on it.
(5) Release the tap and remove the take-up threading in/out arm.
(6) Remove the supply threading in/out arm.


(2)
MARKINGS
SUPPLY GUIDE ROLLER
TAKE-UP GUIDE ROLLER
(3)
GUIDE BASE CLAMP PLATE
(6)
(5)
MARKINGS
SUPPLY THREADING IN/OUT ARM
TAKE-UP THREADING IN/OUT ARM
(4)

13. Take-up pulley and Clutch gear assembly

Take-up pulley
(1) Release the reel belt.
(2) Remove the washer and then remove the take-up pulley.

Clutch Gear Assembly
(3) Remove the slider block and reel drive gear (see item IV-6).
(4) Remove the reel belt (cf. step 1) and then remove the three screws.


(1)
(2)
(4)
TAKE-UP PULLEY
(4)
CLUTCH GEAR ASSEMBLY

14. Take-up gear, Change arm, Change gear, Relay gear, FL Change gear and FL Change lever

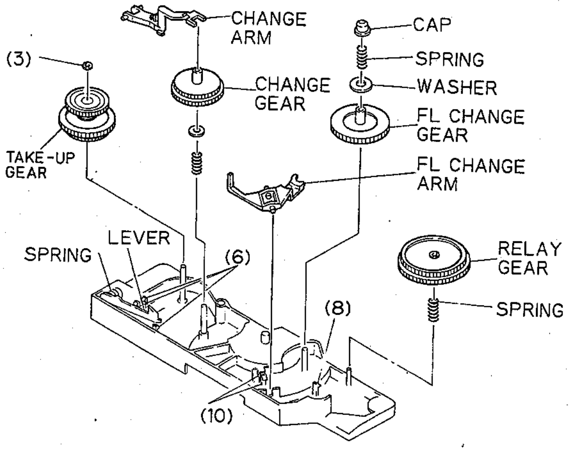
(1) Remove the slider block and the reel drive gear (see item IV-6).
(2) Remove the clutch gear assembly (see item IV-13).

Take-up gear
(3) Remove the washer and then remove the take-up gear.

Change arm, Change gear
(4) Remove the take-up gear.
(5) Release the tap and remove the spring hooked to the change arm.
(6) Release the three taps and remove the change arm.
(7) Remove the washer and remove the change gear.

Relay gear
(8) Release the tap and remove the relay gear.

FL Change gear, FL Change lever
(9) Remove the cap, the spring and the washer and then remove the FL change gear.
(10) Release the two taps and remove the FL change lever.

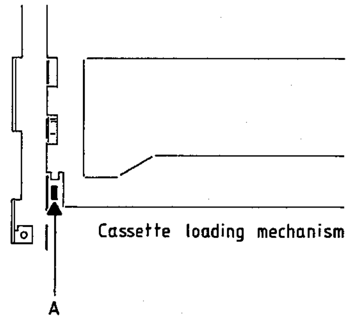

CHANGE ARM
CAP
(3)
SPRING
CHANGE GEAR
WASHER
FL CHANGE GEAR
TAKE-UP GEAR
FL CHANGE ARM
LEVER
SPRING
(6)
RELAY GEAR
(8)
SPRING
(10)

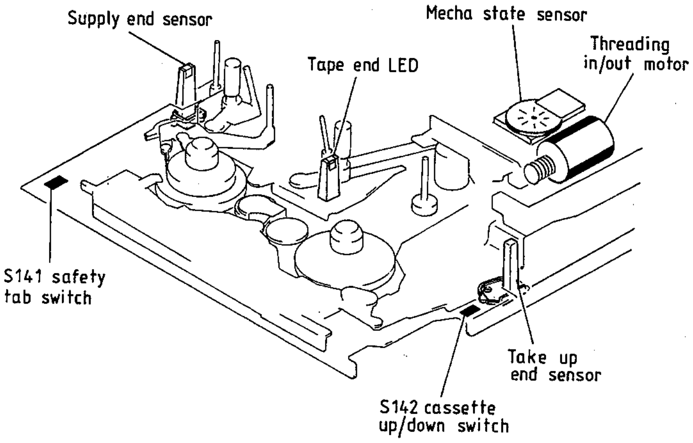
REPAIR TIPS

How to run the VTR without a cassette

1) Remove the side panels and the top cover.
2) Stick a piece of paper over the tape end LED.
3) Press down the hook A in the upper left front-side of the cassette loading mechanism, and press the mechanism into the VTR. Light must not be supplied from the outside (from e.g. a work lamp).
4) The VTR can now be put in all modes except recording. To get the VTR into recording mode, release the safety tap switch, S141.

When you have removed the paper covering the tape end LED, remember to disconnect the VTR from the mains to reset the system-control microcomputer.


Cassette loading mechanism
A


Supply end sensor
Mecha state sensor
Tape end LED
Threading in/out motor
S141 safety tab switch
Take up end sensor
S142 cassette up/down switch

Fan motor reset

If the fan motor is blocked, the VTR goes into stand-by within 1-2 seconds.

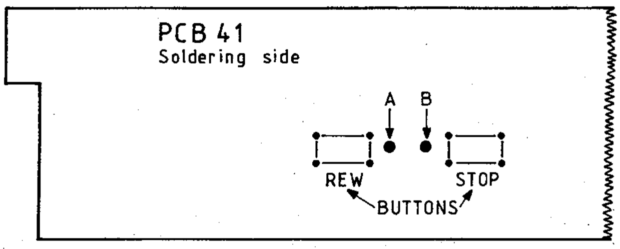
Test of VPS (Type 4533)

Set the clock 10 minutes back and program the timer for the desired VPS transmission.

Set the VTR in ST.BY. Now only the VPS code will start the VTR at the correct time.

Test of timer

Short-circuit points A and B on PCB 41.
The clock speed is now increased 60 times (minutes to seconds) for use when testing timer functions.
The clock can be seen in the Set Clock menu.


PCB 41
Soldering side
A
B
REW
STOP
BUTTONS

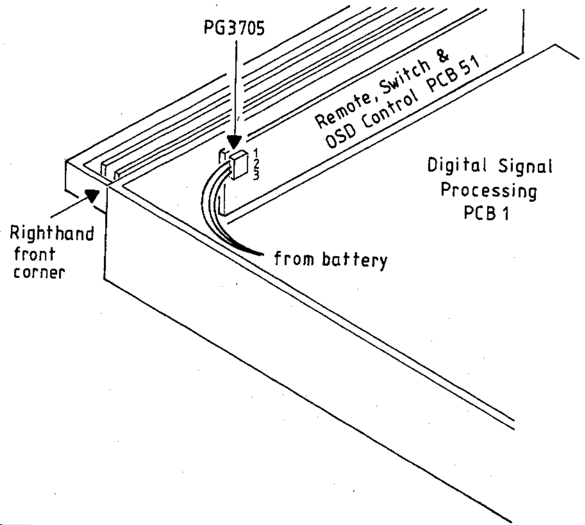
Lithium battery

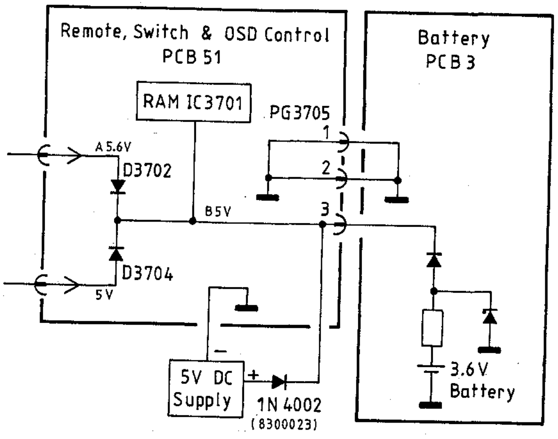
ADVARSEL!
LITHIUMBATTERI – EKSPLOSIONSFARE.
UDSKIFTNING MA KUN FORETAGES AF EN SAGKYNDIG.
OG SOM BESKREVET I SERVICE MANUAL.

WARNING!
LITHIUM BATTERY – RISK OF EXPLOSION
TO BE REPLACED BY QUALIFIED SERVICEMAN ONLY
AND AS DESCRIBED IN THE SERVICE MANUAL.

WARNING!
Short-circuit and overcharging of some types of lithium batteries may result in a violent explosion.
When replacing the lithium battery in this set note the following:
Use **only** batteries af the same make and type as mentioned in this service manual (see page 3-2).
Place the battery exactly like the old one.

When servicing the VTR, **do not** disconnect the wire bundle with PG 3705 on PCB 51, as this will cause loss of data. PG 3705 may only be disconnected when replacing PCB51 or IC3701 on PCB 51 or the lithium battery. If, for any other reason, PG 3705 needs to be disconnected, **first** connect a 5 V DC supply **via a diode** with + (the + pole) to pin 2 of PG 3705 and – (the – pole) to ground.


PG3705
1
2
3
Remote, Switch & OSD Control PCB 51
Digital Signal Processing PCB 1
Righthand front corner
from battery


Remote, Switch & OSD Control PCB 51
Battery PCB 3
RAM IC3701
PG3705
1
2
3
A5.6V
D3702
B5V
D3704
5V
5V DC Supply
+
–
1N 4002
(8300023)
3.6V Battery

Survey of 12 V play voltage on pin 8 on the AV socket

Operation →	Front key ’PLAY’	Remote cont. ’V.TAPE’
VX5000 with IR sensor	12 V	12 V
VX5000 with L/LX2500/2800 and datalink module Mk2	12 V	12 V
VX5000 with L/LX2502/2802 SW ≧2.1	12 V	–
VX5000 with MX5000 SW ≧2.0	12 V	–

Release of 12 V play voltage: Press ’TV’ or ’SAT’ or ’●’ (ST.BY).

IMPORTANT

Before power up of the MX/LX and VX5000, be sure to connect the 21 pin AV-cable.
This ensures a correct start up-identification between the VTR and the TV.

Test modes

1. LED test

Press HQ OFF on the front keys and at the same time connect the VTR to the mains. After 10 seconds release HQ OFF, then press it again. All indicators behind the front glass will now light up in a repeated sequence.

The level meter, the ST.BY. indicator and the backlights in the secondary operation panel have to be tested separately.

Out of test mode: Disconnect the VTR from the mains.

Set-up for points 2,3,4 and 5.
Feed an aerial signal to the AERIAL socket on the VTR.
Connect a TV to the AV socket on the VTR.
Connect the RF OUT socket on the VTR to the aerial socket on the TV.
When using another TV than the L/LX 2502/2802 or the MX 5000, connect an IR sensor (part no. 8915500) to the REMOTE SENSOR socket on the VTR for remote control with Beolink 1000.
Tune the VTR to receive an aerial signal.

2. RAM/ROM test

For this test, any TV set with an AV socket can be used. However, the IR sensor must NOT be connected to the REMOTE SENSOR socket.
Tune the TV to receive an aerial signal.
Press HQ OFF on the front keys and at the same time connect the VTR to the mains. After more than 10 seconds release HQ OFF and press >> on the front keys.
Now the display shown below should appear on the TV screen.

```
VX5000
Version x.xx
xxxxxx

Rom       PASS
Int Ram   PASS
Ext Ram   PASS
```

"Version" indicates the number of the software version in the VTR.

If Rom does not show PASS, the software IC3710 on PCB 51 is defective.

If Int Ram/Ext Ram do not show PASS, the Operation control module IC3701 on PCB 51 is defective.

Out of test mode: Disconnect the VTR from the mains.

3. Self test

This self test is meant as an after repair check of basic functions.

Load a tape.
Press SOUND on the front keys and at the same time connect the VTR to the mains. When the VTR starts to play, release the SOUND button.
Press TV —> V.TAPE on Beolink 1000. Now the status line on the TV screen will show the current status for approx. 3 seconds every time a function is changed.

Fault indication:
If a fault occurs, the counter display will flash FAIL, and the cassette will be ejected.
During test, check the TV picture and the sound.
NOTE! Not all faults will be detected during self test.

Sequence	Approx. Seconds
Play	20
Tune (if no channel is tuned)	–
Record	30
Cue <<	4
Play (HIFI)	10
Play (Linear)	10
Still	2
Frame Advance	5
Stop (threading out —> in)	4
Cue << (to rec. start)	5
Cue >>	3
Record ATR	40
Return	10
Play ATR	40
Eject	7
Stand By	
Total	190

Out of test mode: disconnect the VTR from the mains.

4. Continuous play

Load a tape.
Press PLAY on the front keys and at the same time connect the VTR to the mains. When the VTR starts to play, release the PLAY button. The VTR plays back the tape, rewinds the tape to the beginning, and then starts playing back again.

Out of continuous play: Press ● (ST.BY.).

5. Continuous record

Load a tape.
Press RECORD on the front keys and at the same time connect the VTR to the mains.
When the display on the VTR shows RECORDING PAUSE, release the RECORD button and press SOURCE until AUX lights up. Then press RECORD on the front keys.
Now the VTR starts recording (for instance from a camera) until the end of the tape. The VTR then rewinds the tape to the beginning and starts recording again.

Out of continuous record: Press ● (ST.BY.).

Starting-up routine for tape transport mechanism

The tape transport mechanism is controlled by the system control 21IC901 and the servo circuits which receive feedback from the various sensors in the mechanism.

Below is a brief description of how the mechanism starts up.

Before applying the below description, check all supply voltages in the system control and the servo circuits.

With the VTR in ST.BY., check 21IC901 pins

36-37,	Data pulses
38,	Clock pulses
51-52,	Osc. frequency

Loading a cassette:

Press the cassette into the cassette holder – pin 54 on 21IC901 (S142) goes low. Now pin 29 on 21IC901 goes high; pins 25, 26 and 27 on 21IC901 and pin 19 on 21IC601 become active and the capstan motor starts rotating, thereby making the mechanism drive the cassette into the correct position. To make the capstan motor rotate, pin 33 on 21IC901 must have tacho pulses from the capstan motor. When the cassette is in position, pin 54 on 21IC901 goes high.

During unloading, the same sequence occurs, only in reverse order, and pin 10 on 21IC901 goes high to make the capstan motor run in the reverse way of loading.

For accept of the cassette, pin 45 or 46 on 21IC901 must be low when the cassette is loaded.

When the cassette is loaded, the threading in/out motor makes a few rotations to get the tape in half threaded-in position.

Tape transport:

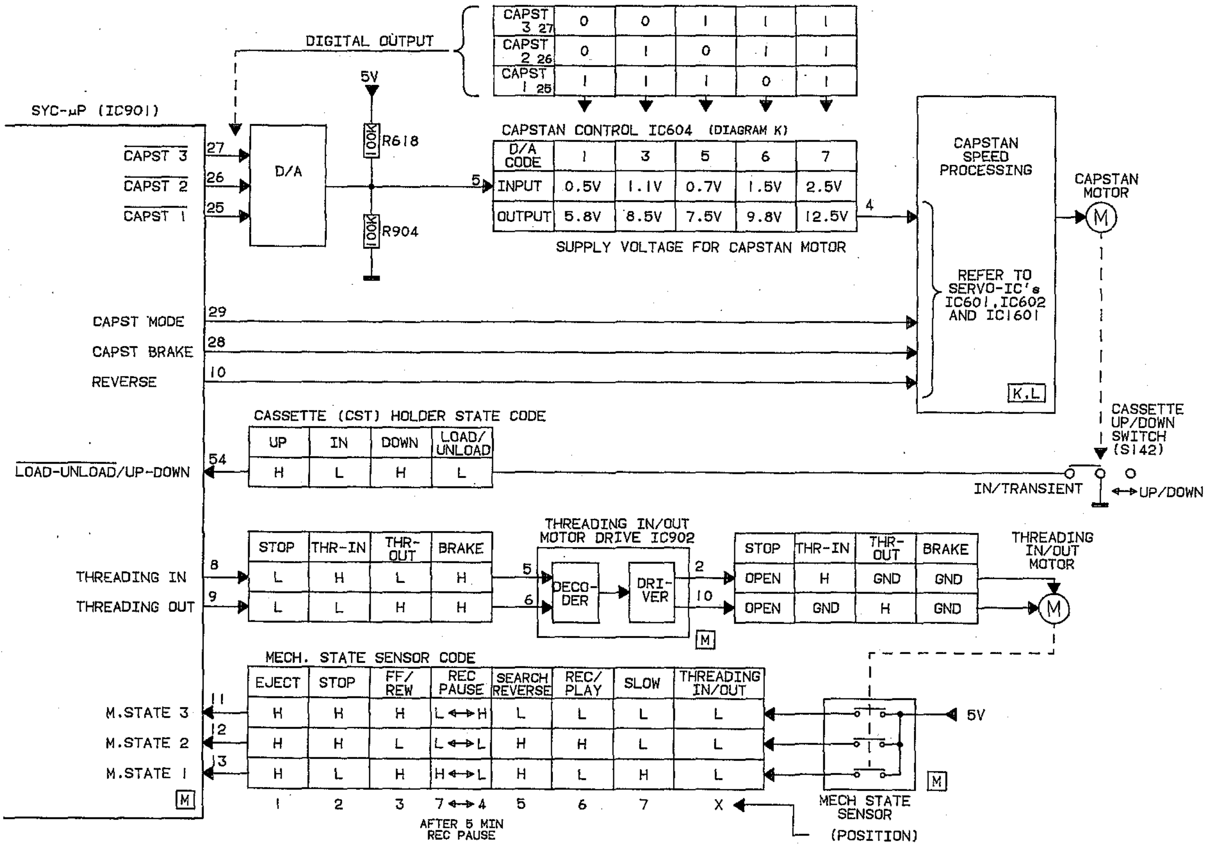
Load a cassette and press PLAY on the front keys. Now the cylinder should start rotating. At the same time the threading in/out motor starts rotating, and the tape is threaded in. Then pin 58 on 21IC901 goes high to inform 41IC701 that the tape is threaded in.

The cylinder is driven via the servo circuit (21IC601) from pin 4 or 5 on 21IC901. The cylinder gives tacho feedback to pin 32 and 33 and frequency feedback to pin 61 on 21IC601. These feedbacks generate a SW 25 Hz signal which is supplied to pin 23 on 21IC901. If the SW 25 Hz signal is not correct, the VTR goes into STOP mode.

During tape transport, the capstan speed is controlled by pins 28 and 29 on 21IC901 via the servo circuits.
Feedback from the capstan motor is supplied to pins 22 and 23 on 21IC901.

Other conditions for correct tape transport:

Dew sensor: pin 20 on 21IC901 must be low.
Take up and supply reel: there must be correct pulses on pins 47 and 48 on 21IC901.
Tape end sensors: pins 45 and 46 on 21IC901 must be low during tape transport.


SYC-μP (IC901)
DIGITAL OUTPUT
CAPST 3
CAPST 2
CAPST 1
27
26
25
D/A
5V
100K R618
100K R904
5
CAPSTAN CONTROL IC604 (DIAGRAM K)
SUPPLY VOLTAGE FOR CAPSTAN MOTOR
4
CAPSTAN SPEED PROCESSING
REFER TO SERVO-IC's IC601, IC602 AND IC1601
K, L
CAPSTAN MOTOR
M
CAPST MODE
CAPST BRAKE
REVERSE
29
28
10
CASSETTE (CST) HOLDER STATE CODE
LOAD-UNLOAD/UP-DOWN
54
CASSETTE UP/DOWN SWITCH (S142)
IN/TRANSIENT
UP/DOWN
THREADING IN
THREADING OUT
8
9
THREADING IN/OUT MOTOR DRIVE IC902
5
6
DECO-DER
DRI-VER
2
10
M
THREADING IN/OUT MOTOR
M
MECH. STATE SENSOR CODE
M.STATE 3
M.STATE 2
M.STATE 1
11
12
13
M
5V
MECH STATE SENSOR
M
(POSITION)
AFTER 5 MIN REC PAUSE

CAPST 3 27	0	0	1	1	1
CAPST 2 26	0	1	0	1	1
CAPST 1 25	1	1	1	0	1

D/A CODE	1	3	5	6	7
INPUT	0.5V	1.1V	0.7V	1.5V	2.5V
OUTPUT	5.8V	8.5V	7.5V	9.8V	12.5V

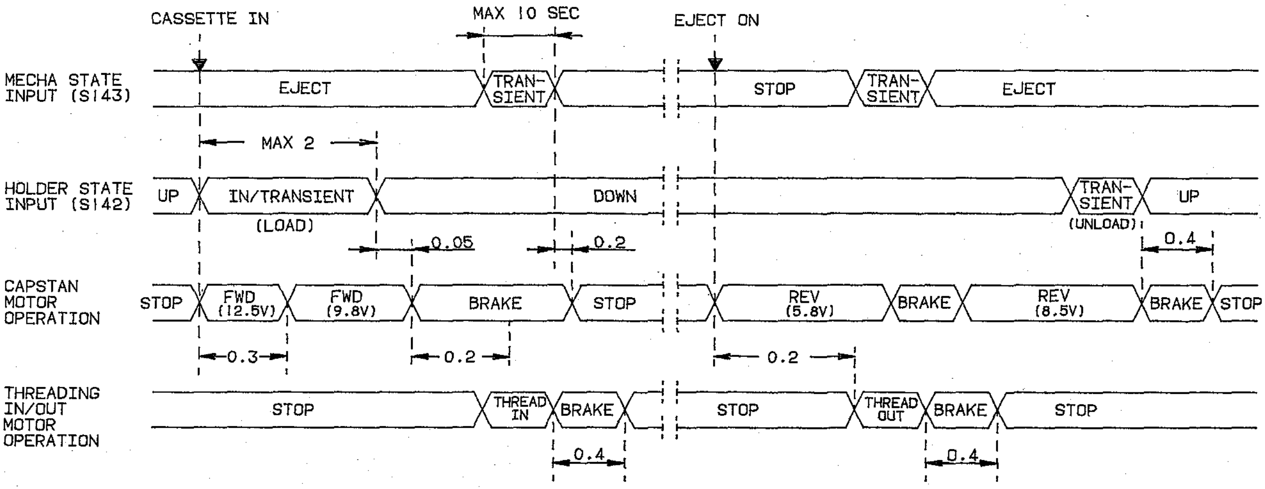
UP	IN	DOWN	LOAD/ UNLOAD
H	L	H	L

STOP	THR-IN	THR-OUT	BRAKE
L	H	L	H
L	L	H	H

STOP	THR-IN	THR-OUT	BRAKE
OPEN	H	GND	GND
OPEN	GND	H	GND

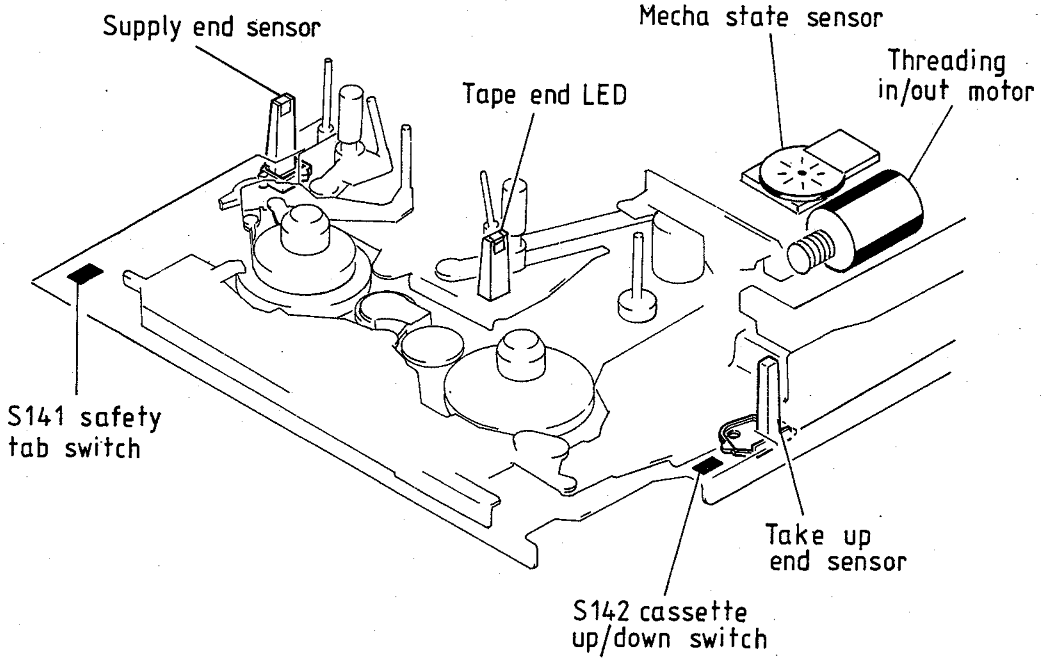
EJECT	STOP	FF/ REW	REC PAUSE	SEARCH REVERSE	REC/ PLAY	SLOW	THREADING IN/OUT
H	H	H	L↔H	L	L	L	L
H	H	L	L↔L	H	H	L	L
H	L	H	H↔L	H	L	H	L
1	2	3	7↔4	5	6	7	X

CASSETTE LOADING AND THREADING IN/OUT CONTROL CIRCUIT

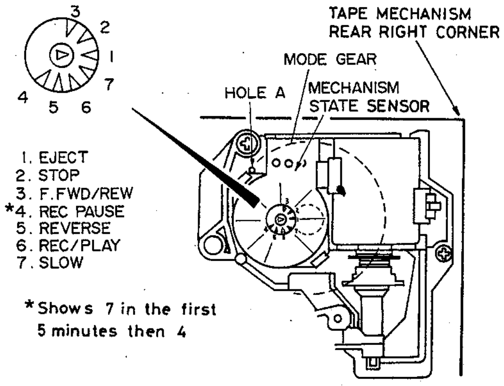

CASSETTE IN
MAX 10 SEC
EJECT ON
MECHA STATE INPUT (S143)
EJECT
TRAN-SIENT
STOP
TRAN-SIENT
EJECT
MAX 2
HOLDER STATE INPUT (S142)
UP
IN/TRANSIENT
(LOAD)
DOWN
TRAN-SIENT
(UNLOAD)
UP
0.05
0.2
0.4
CAPSTAN MOTOR OPERATION
STOP
FWD (12.5V)
FWD (9.8V)
BRAKE
STOP
REV (5.8V)
BRAKE
REV (8.5V)
BRAKE
STOP
0.3
0.2
0.2
THREADING IN/OUT MOTOR OPERATION
STOP
THREAD IN
BRAKE
STOP
THREAD OUT
BRAKE
STOP
0.4
0.4

(TIMES IN SECOND)

CASSETTE LOADING/UNLOADING TIMING


Supply end sensor
Mecha state sensor
Threading in/out motor
Tape end LED
S141 safety tab switch
Take up end sensor
S142 cassette up/down switch

On the mechanism state sensor it can be seen whether the tape transport mechanism is in the right position.


3
2
1
7
4
5
6
TAPE MECHANISM REAR RIGHT CORNER
MODE GEAR
HOLE A
MECHANISM STATE SENSOR
1. EJECT
2. STOP
3. F.FWD/REW
*4. REC PAUSE
5. REVERSE
6. REC/PLAY
7. SLOW
*Shows 7 in the first 5 minutes then 4

Faults that may occur because of adjustments

Fault:	**Adjustment:**
The brightness of the picture is not stabilized.	Video Output Level. Video Input Level.
The vertical sync. signal is degraded and vertical jitter occurs. Switching noise occurs in lower part of picture.	Head Switching Point.
Noise occurs even with tracking control centred. Noise cannot be removed by turning the tracking control.	Tracking Preset.
A noise bar appears in the picture during slow play.	Slow Tracking Preset.
Horizontal jitter occurs in the picture during slow play.	Slow Stability.
Vertical jitter during trick play.	Vert. Sync.
Diamond beats occur in the played back picture or colour becomes poor.	Rec. Chroma Level.
The proper sound volume cannot be obtained.	Hi-Fi Audio Playback Level. Audio Playback Level.
Noise occurs even with a small dropout of envelope. Hi-Fi audio is not switched to linear audio when an envelope is missed.	Dropout Level.
High-frequency response deteriorates. Sound tends to be distorted.	Audio Bias Level.
The audio level is low and sound is distorted.	Audio Detection.
A level difference occurs between L and R channels.	Stereo Signal Output Level.
The separation of stereo sound becomes defective. (Leak of signal from R to L channel).	Lch Separation.
Correct tuning is not performed.	15.6 kHz Free-Run.
The character display position has drifted.	Character Position.
The brightnesses of the main and sub pictures are different in the P in P mode.	AGC Level. Luminance Signal Amplitude. Sub Screen Brightness.
Colour is unstable or the picture has no colour in the multi-picture and P in P modes.	4.43 MHz.
Flickering occurs in the sub screen in the P in P mode.	Colour Saturation.
The centre of the sub screen has drifted in the P freeze and P in P modes./Colour is unstable.	Sync Signal Position
The tint of the sub screen is abnormal in the P in P mode.	White Balance.
The brightness of the main screen changes in the P in P and P swop modes.	AGC Level (Fine).
The tints of the main and sub screens do not match in the P in P mode.	Main/Sub Screen Colour Matching.

Faults that may occur because of lack of cleaning

Phenomenon	Inspection Location
Poor S/N, no color	Dirt on video head or worn video head
Tape does not run or tape is slack	Dirt on pressure roller, reel belt or flywheel belt
Vertical jitter, horizontal jitter	Dirt on video head or in tape transport system
Colour beats	Dirt on full-erase head
Low volume of sound distorted	Dirt on audio/control head
Fast forward or rewind is not done or rotation is slow	Dirt on reel belt

Video head cleaning kit part no. 3627000.

Factory setup

Basic setup menu:

```
Basic setup                 V.Tape
----------------------------------

Multi-program               9
Display mode                Counter
Track marker                On
Front keys                  Active
VU-meter                    On
Decoder                     No
----------------------------------

Accept page: press PLAY
```

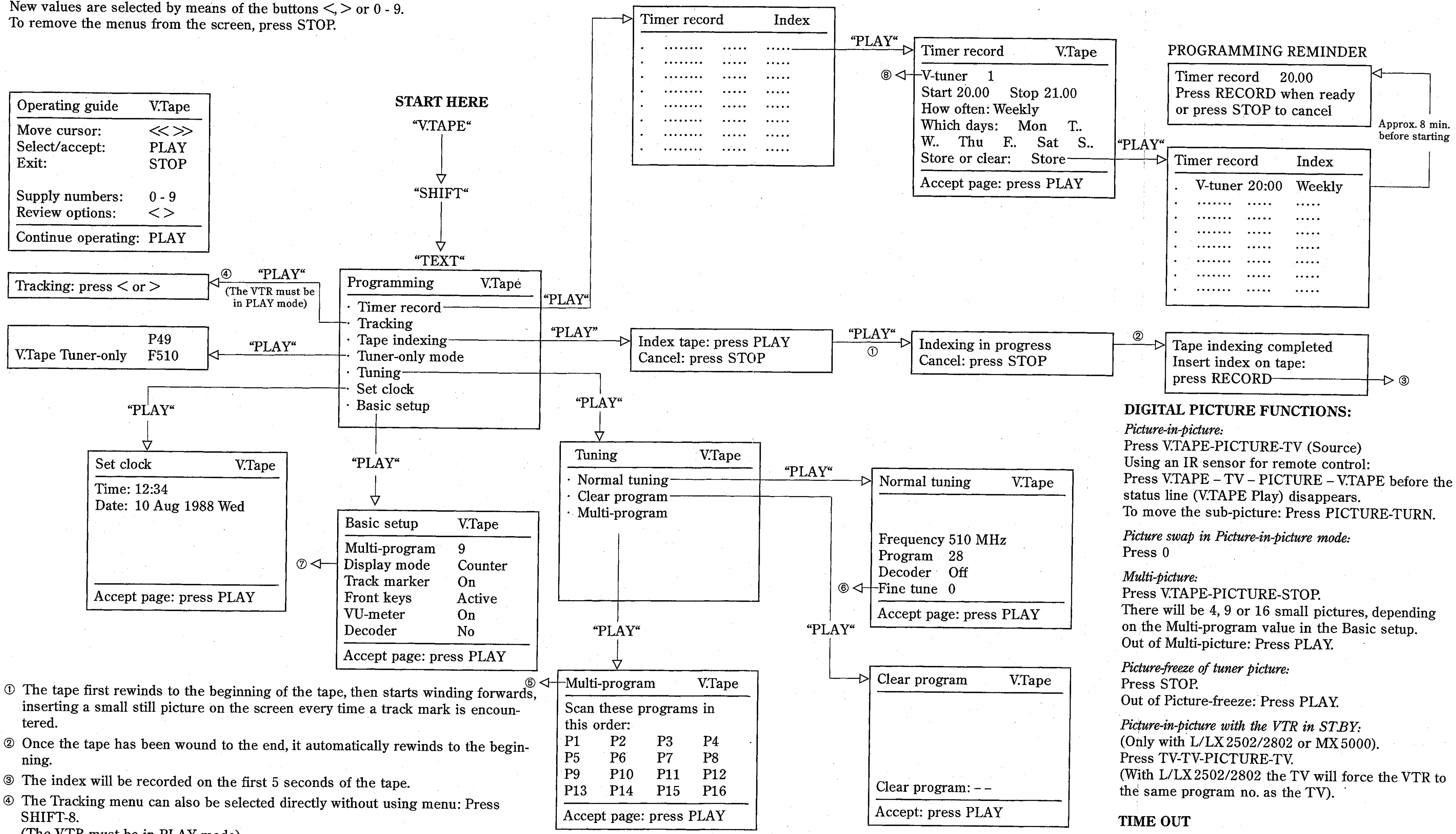
Multi-program menu:

```
Multi-program                V.Tape
-----------------------------------

Scan these programs in this order:
P1        P2        P3        P4
P5        P6        P7        P8
P9        P10       P11       P12
P13       P14       P15       P16
-----------------------------------

Accept page: press PLAY
```

Modulator output:
599 MHz (CH37).

Brief Operation Guide

For operation use a Beolink 1000 terminal via an L/LX 2502/2802 (S/W 2.1 version), an MX 5000 or an IR sensor (part no. 8915500).
The present contents of the menus depend on the operation.
The cursor in the menus is moved by means of the buttons <<, >>.
New values are selected by means of the buttons <, > or 0 - 9.
To remove the menus from the screen, press STOP.



START HERE
"V.TAPE"
"SHIFT"
"TEXT"
"PLAY"
④ "PLAY" (The VTR must be in PLAY mode)
①
②
③
⑤
⑥
⑦
⑧
Approx. 8 min. before starting

Operating guide V.Tape
Move cursor: << >>
Select/accept: PLAY
Exit: STOP
Supply numbers: 0 - 9
Review options: < >
Continue operating: PLAY

Tracking: press < or >

V.Tape Tuner-only P49 F510

Programming V.Tape
- Timer record
- Tracking
- Tape indexing
- Tuner-only mode
- Tuning
- Set clock
- Basic setup

Timer record Index
. ...

Timer record V.Tape
V-tuner 1
Start 20.00 Stop 21.00
How often: Weekly
Which days: Mon T.. W.. Thu F.. Sat S..
Store or clear: Store
Accept page: press PLAY

PROGRAMMING REMINDER
Timer record 20.00
Press RECORD when ready or press STOP to cancel

Timer record Index
. V-tuner 20:00 Weekly
. ...

Index tape: press PLAY
Cancel: press STOP

Indexing in progress
Cancel: press STOP

Tape indexing completed
Insert index on tape:
press RECORD

Set clock V.Tape
Time: 12:34
Date: 10 Aug 1988 Wed
Accept page: press PLAY

Basic setup V.Tape
Multi-program 9
Display mode Counter
Track marker On
Front keys Active
VU-meter On
Decoder No
Accept page: press PLAY

Tuning V.Tape
- Normal tuning
- Clear program
- Multi-program

Normal tuning V.Tape
Frequency 510 MHz
Program 28
Decoder Off
Fine tune 0
Accept page: press PLAY

Multi-program V.Tape
Scan these programs in this order:
P1 P2 P3 P4
P5 P6 P7 P8
P9 P10 P11 P12
P13 P14 P15 P16
Accept page: press PLAY

Clear program V.Tape
Clear program: - -
Accept: press PLAY

① The tape first rewinds to the beginning of the tape, then starts winding forwards, inserting a small still picture on the screen every time a track mark is encountered.

② Once the tape has been wound to the end, it automatically rewinds to the beginning.

③ The index will be recorded on the first 5 seconds of the tape.

④ The Tracking menu can also be selected directly without using menu: Press SHIFT-8.
(The VTR must be in PLAY mode).
The tracking is automatically centered when the cassette is ejected.

⑤ When repairing the VTR, do not change the customers set-up of this menu. In VTR's for stock/resale, the menu must be set as shown.

⑥ The frequency can be varied ±150 kHz.

⑦ The E240 button can only be used when Display mode is set to Time left.

⑧ This line can show VPS also in VTR's without a built-in VPS.

DIGITAL PICTURE FUNCTIONS:

Picture-in-picture:
Press V.TAPE-PICTURE-TV (Source)
Using an IR sensor for remote control:
Press V.TAPE – TV – PICTURE – V.TAPE before the status line (V.TAPE Play) disappears.
To move the sub-picture: Press PICTURE-TURN.

Picture swap in Picture-in-picture mode:
Press 0

Multi-picture:
Press V.TAPE-PICTURE-STOP.
There will be 4, 9 or 16 small pictures, depending on the Multi-program value in the Basic setup.
Out of Multi-picture: Press PLAY.

Picture-freeze of tuner picture:
Press STOP.
Out of Picture-freeze: Press PLAY.

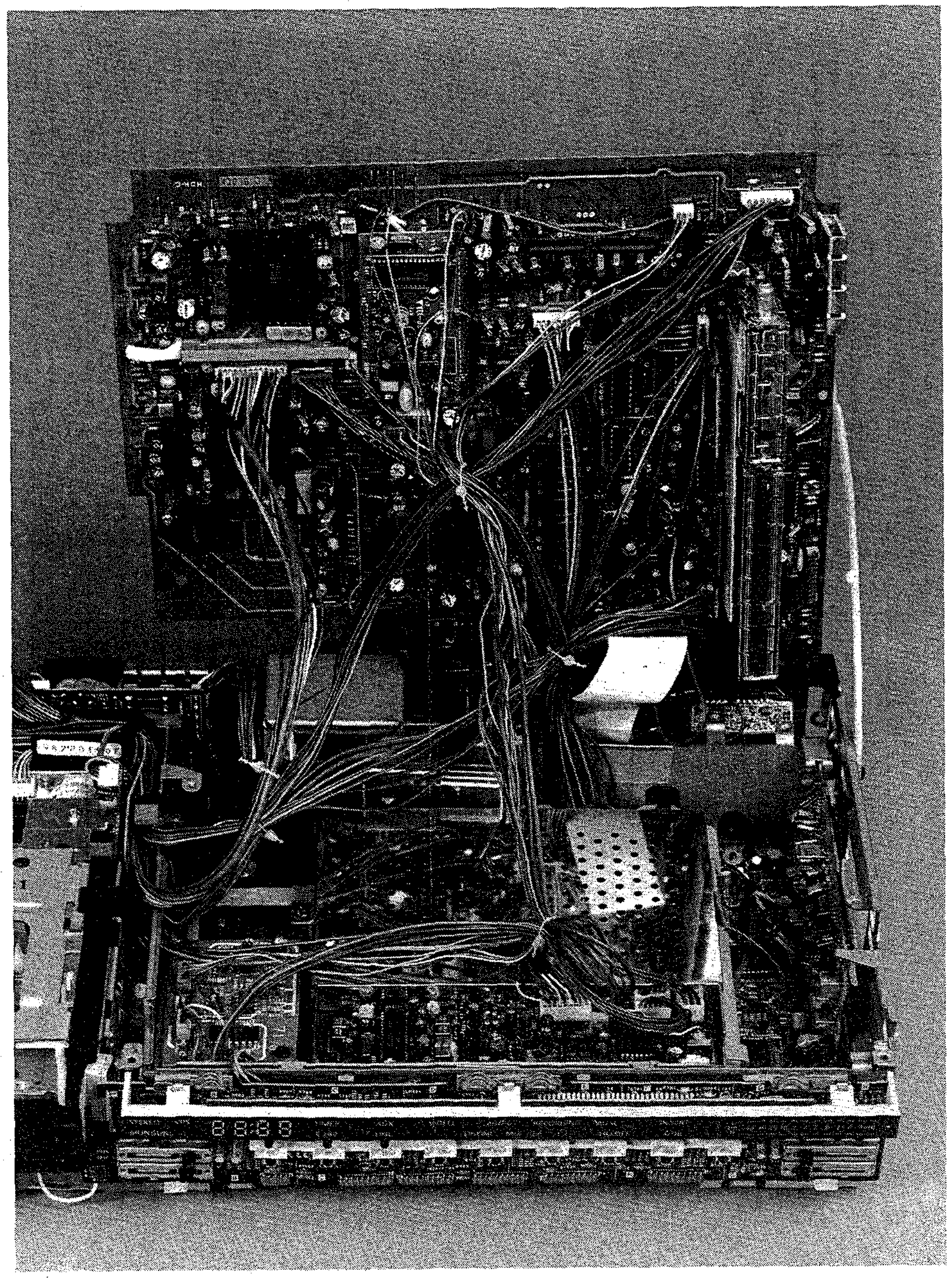
Picture-in-picture with the VTR in ST.BY:
(Only with L/LX 2502/2802 or MX 5000).
Press TV-TV-PICTURE-TV.
(With L/LX 2502/2802 the TV will force the VTR to the same program no. as the TV).

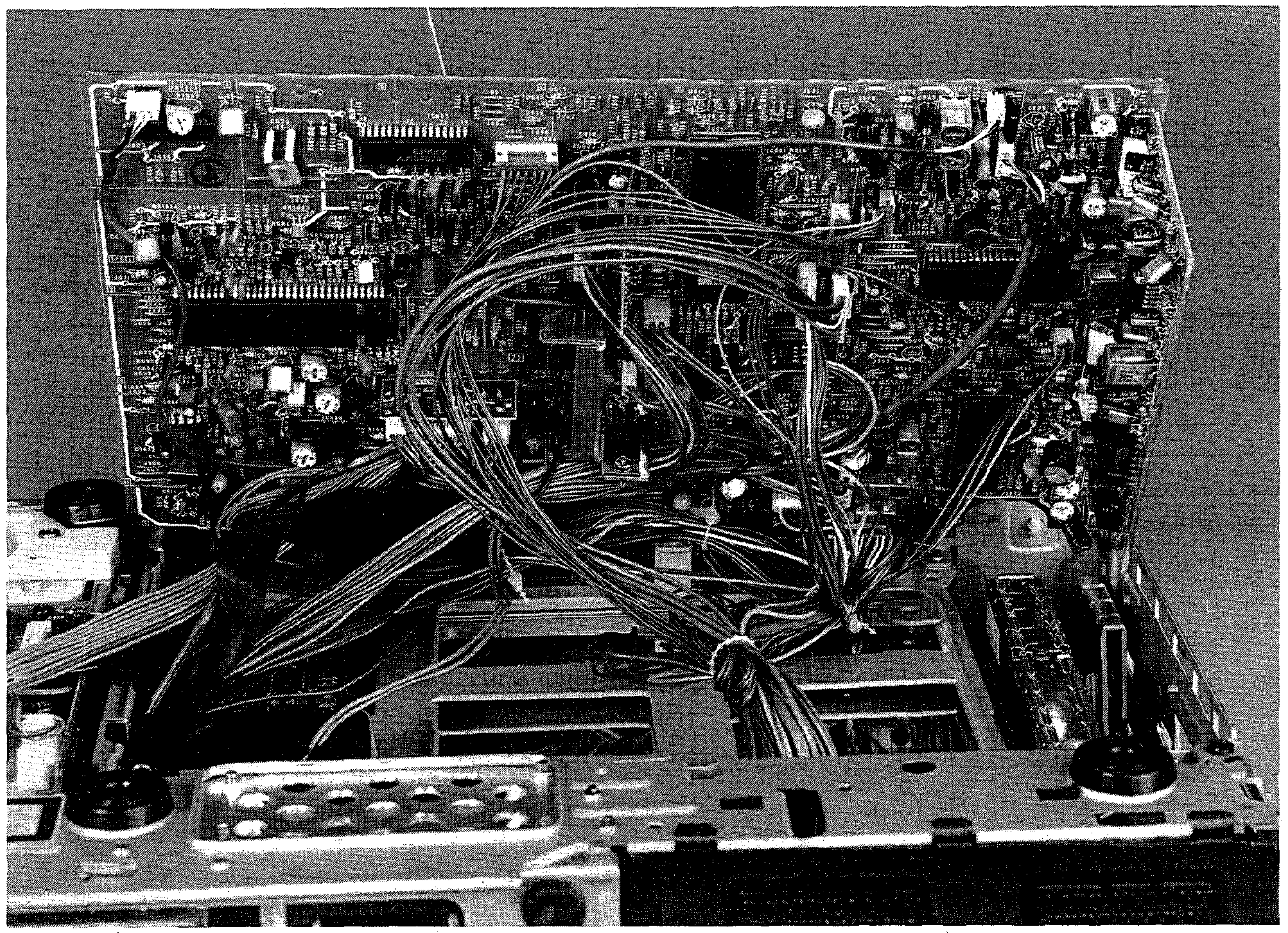
TIME OUT

VX 5000 has time out from different modes:
1. STILL PICTURE mode to STOP mode = 5 minutes.
2. STOP mode to ST.BY mode = 8 minutes.
3. TUNER ONLY mode to ST.BY mode = 24 hours.
4. Picture-in-picture with the VTR in ST.BY. The VTR is in ST.BY but the fan-motor runs. Time out = 1 hour.

Wire bundles

After repair, the wire bundles in the VTR must be placed as shown on the pictures.





Flowcharts

The following flowcharts can be used for analysing faults in the digital signal processing PCB 1.

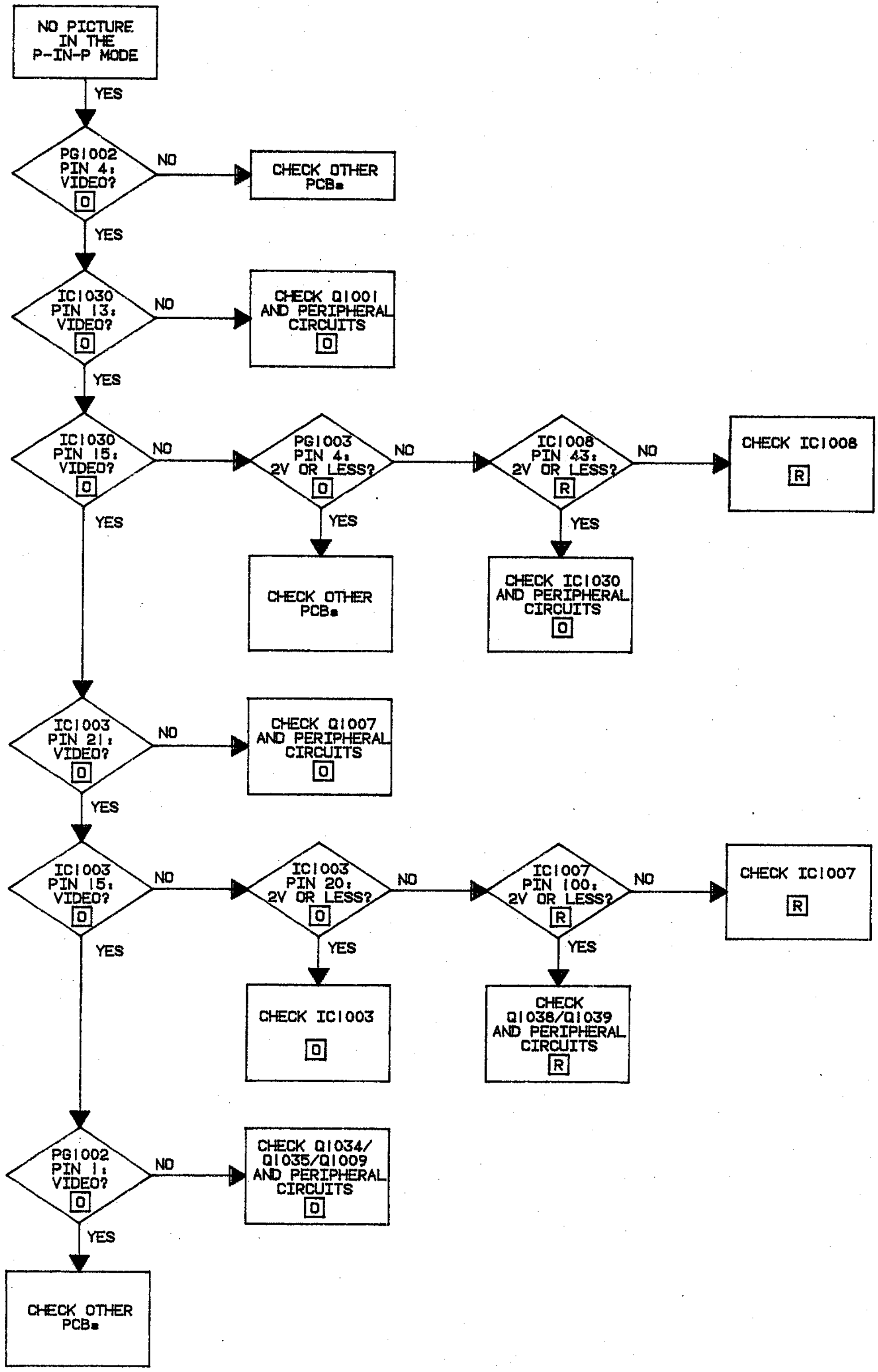
Before using the flowcharts, check D12V on pin 3 of PG1002.

When no special instructions are given, feed a colour bar signal to the "AERIAL IN" socket of the VX 5000 or to pin 20 on the 21-pin A/V socket.

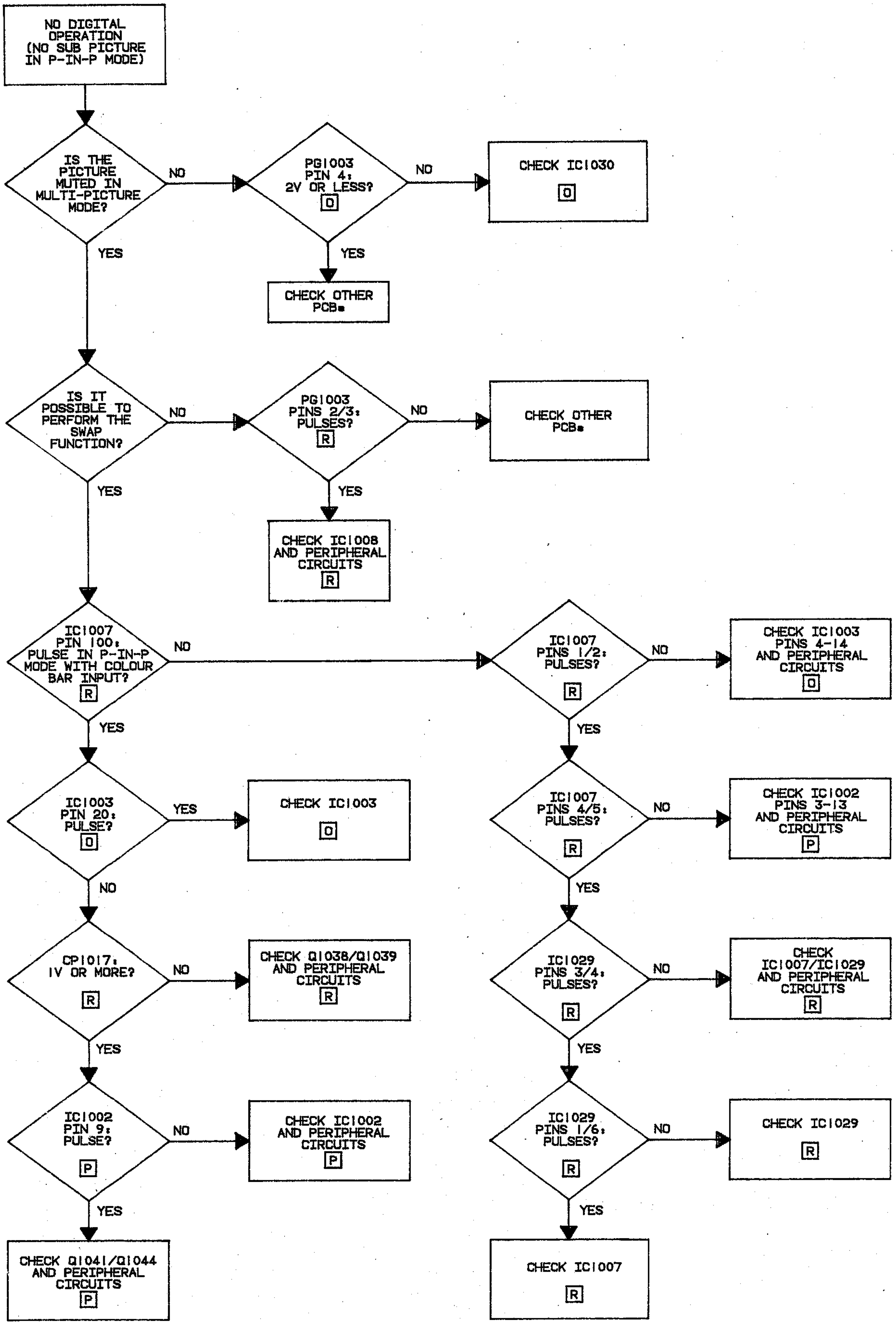
The 9 flowcharts may be used to find faults showing the following symptoms:

1. No picture in the P-in-P mode.
2. No sub-picture in the P-in-P mode.
3. No luminance in the digital picture.
4. No colour in the digital picture.
5. Horizontal sync distortion.
6. Vertical sync distortion.
7. Bad resolution in the digital picture.
8. Unstable colours.
9. Others.

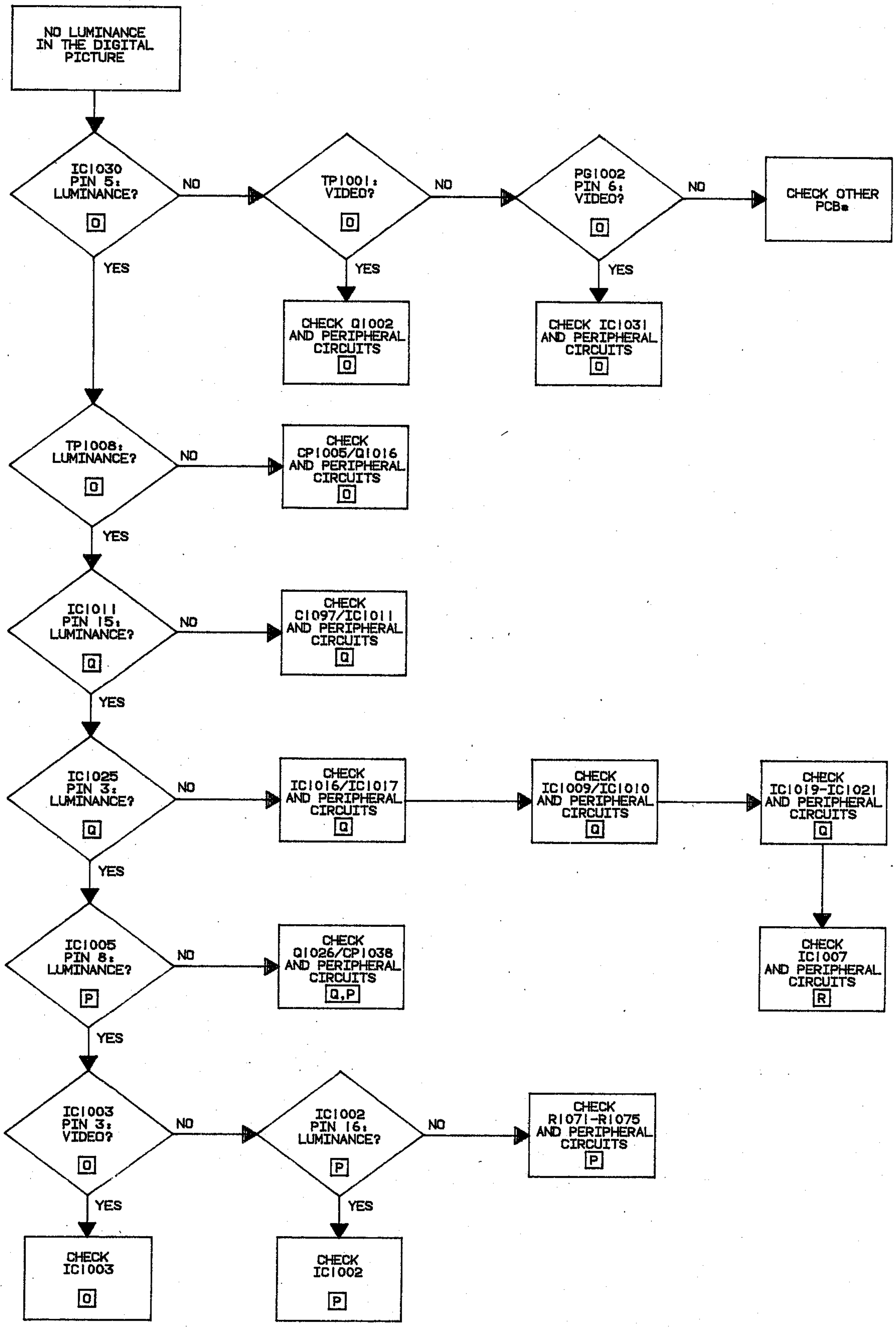
1. No picture in the P-in-P mode.


NO PICTURE IN THE P-IN-P MODE
YES
PG1002 PIN 4: VIDEO? O
NO
CHECK OTHER PCBs
YES
IC1030 PIN 13: VIDEO? O
NO
CHECK Q1001 AND PERIPHERAL CIRCUITS O
YES
IC1030 PIN 15: VIDEO? O
NO
PG1003 PIN 4: 2V OR LESS? O
NO
IC1008 PIN 43: 2V OR LESS? R
NO
CHECK IC1008 R
YES
CHECK OTHER PCBs
YES
CHECK IC1030 AND PERIPHERAL CIRCUITS O
YES
IC1003 PIN 21: VIDEO? O
NO
CHECK Q1007 AND PERIPHERAL CIRCUITS O
YES
IC1003 PIN 15: VIDEO? O
NO
IC1003 PIN 20: 2V OR LESS? O
NO
IC1007 PIN 100: 2V OR LESS? R
NO
CHECK IC1007 R
YES
CHECK IC1003 O
YES
CHECK Q1036/Q1039 AND PERIPHERAL CIRCUITS R
YES
PG1002 PIN 1: VIDEO? O
NO
CHECK Q1034/Q1035/Q1009 AND PERIPHERAL CIRCUITS O
YES
CHECK OTHER PCBs

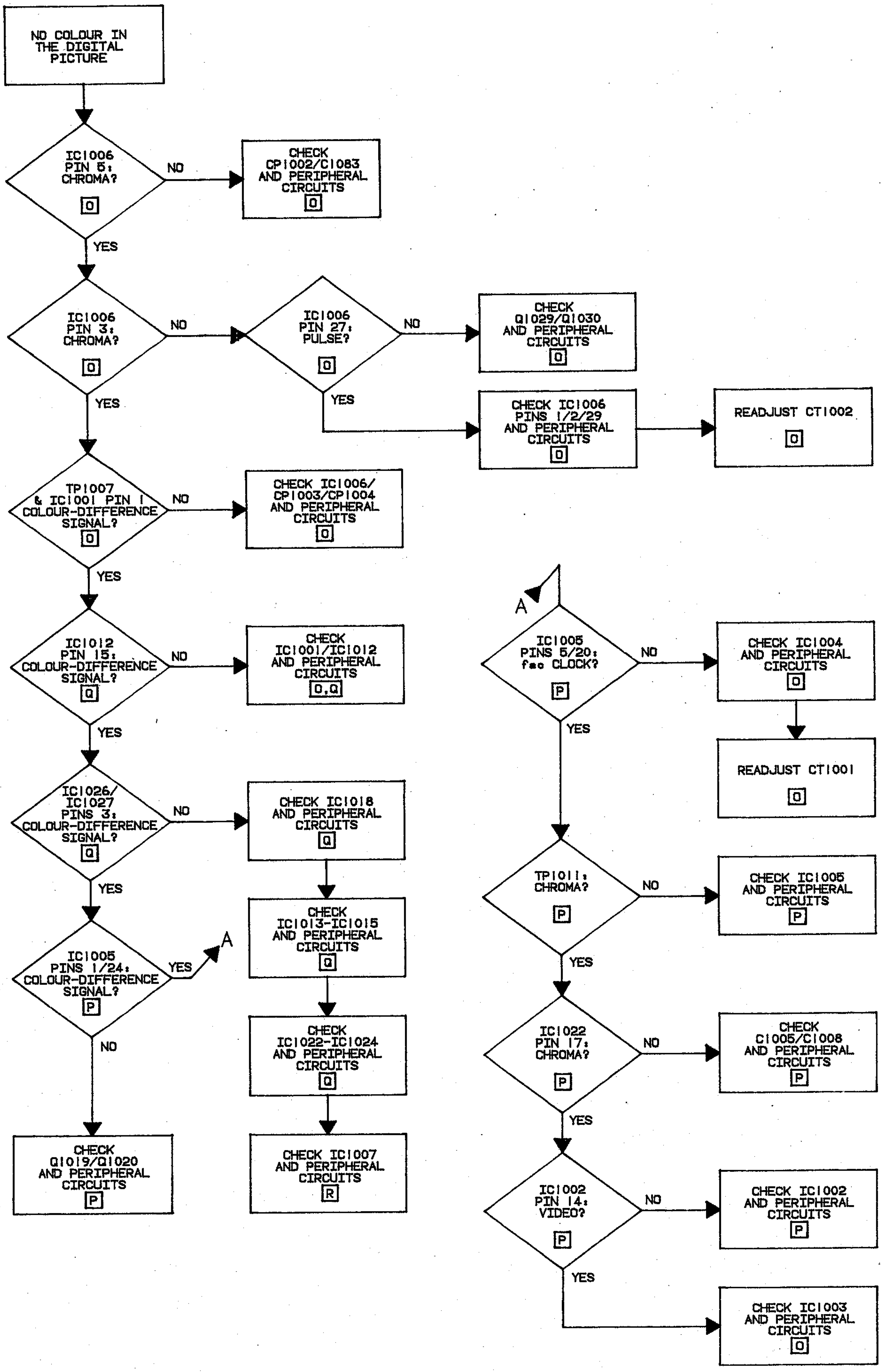
2. No sub-picture in the P-in-P mode.


NO DIGITAL OPERATION (NO SUB PICTURE IN P-IN-P MODE)
IS THE PICTURE MUTED IN MULTI-PICTURE MODE?
NO
PG1003 PIN 4: 2V OR LESS? O
NO
CHECK IC1030 O
YES
YES
CHECK OTHER PCB.
IS IT POSSIBLE TO PERFORM THE SWAP FUNCTION?
NO
PG1003 PINS 2/3: PULSES? R
NO
CHECK OTHER PCB.
YES
YES
CHECK IC1008 AND PERIPHERAL CIRCUITS R
IC1007 PIN 100: PULSE IN P-IN-P MODE WITH COLOUR BAR INPUT? R
NO
IC1007 PINS 1/2: PULSES? R
NO
CHECK IC1003 PINS 4-14 AND PERIPHERAL CIRCUITS O
YES
YES
IC1003 PIN 20: PULSE? O
YES
CHECK IC1003 O
IC1007 PINS 4/5: PULSES? R
NO
CHECK IC1002 PINS 3-13 AND PERIPHERAL CIRCUITS P
NO
YES
CP1017: 1V OR MORE? R
NO
CHECK Q1038/Q1039 AND PERIPHERAL CIRCUITS R
IC1029 PINS 3/4: PULSES? R
NO
CHECK IC1007/IC1029 AND PERIPHERAL CIRCUITS R
YES
YES
IC1002 PIN 9: PULSE? P
NO
CHECK IC1002 AND PERIPHERAL CIRCUITS P
IC1029 PINS 1/6: PULSES? R
NO
CHECK IC1029 R
YES
YES
CHECK Q1041/Q1044 AND PERIPHERAL CIRCUITS P
CHECK IC1007 R

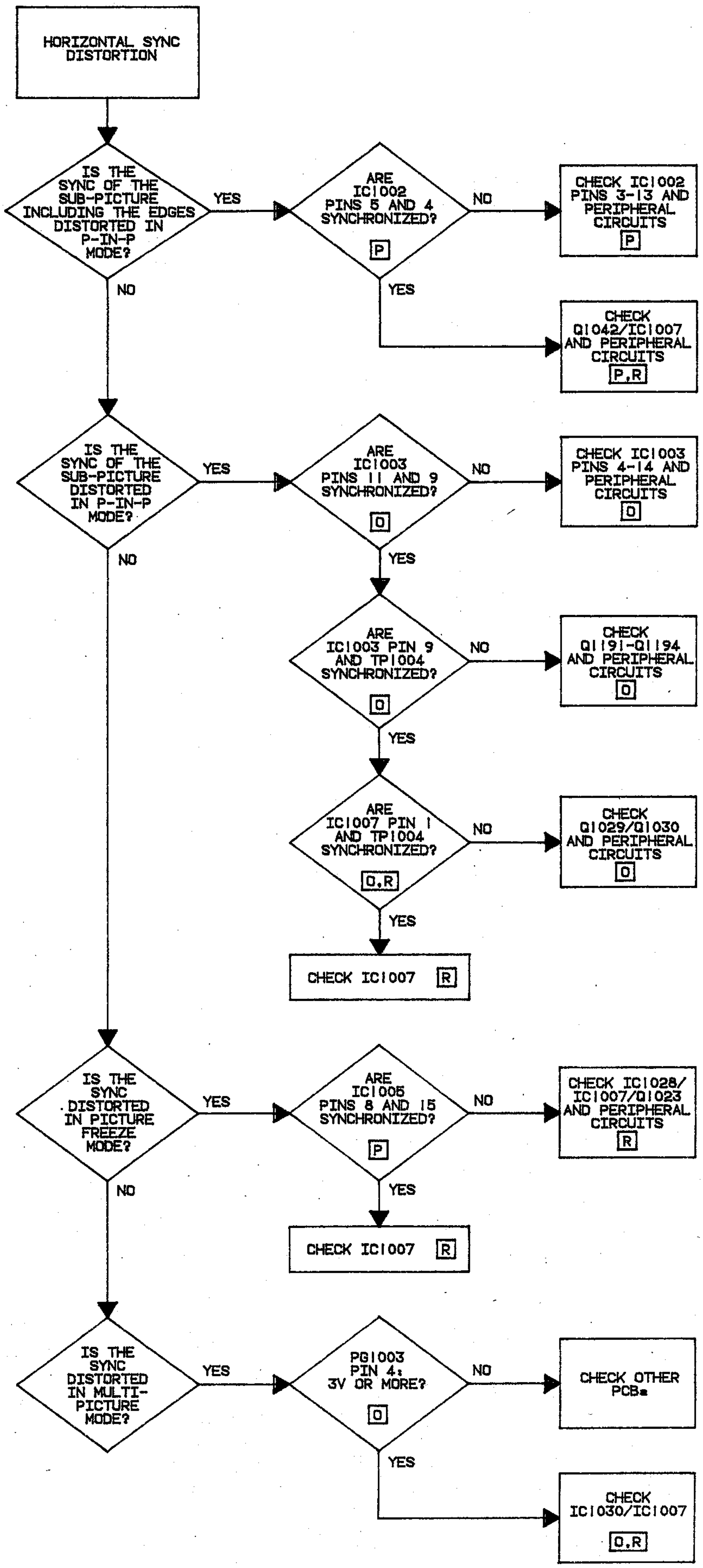
3. No luminance in the digital picture.


NO LUMINANCE IN THE DIGITAL PICTURE
IC1030 PIN 5: LUMINANCE? O
NO
TP1001: VIDEO? O
NO
PG1002 PIN 6: VIDEO? O
NO
CHECK OTHER PCBs
YES
CHECK Q1002 AND PERIPHERAL CIRCUITS O
YES
CHECK IC1031 AND PERIPHERAL CIRCUITS O
YES
TP1008: LUMINANCE? O
NO
CHECK CP1005/Q1016 AND PERIPHERAL CIRCUITS O
YES
IC1011 PIN 15: LUMINANCE? Q
NO
CHECK C1097/IC1011 AND PERIPHERAL CIRCUITS Q
YES
IC1025 PIN 3: LUMINANCE? Q
NO
CHECK IC1016/IC1017 AND PERIPHERAL CIRCUITS Q
CHECK IC1009/IC1010 AND PERIPHERAL CIRCUITS Q
CHECK IC1019-IC1021 AND PERIPHERAL CIRCUITS Q
CHECK IC1007 AND PERIPHERAL CIRCUITS R
YES
IC1005 PIN 8: LUMINANCE? P
NO
CHECK Q1026/CP1038 AND PERIPHERAL CIRCUITS Q,P
YES
IC1003 PIN 3: VIDEO? O
NO
IC1002 PIN 16: LUMINANCE? P
NO
CHECK R1071-R1075 AND PERIPHERAL CIRCUITS P
YES
CHECK IC1003 O
YES
CHECK IC1002 P

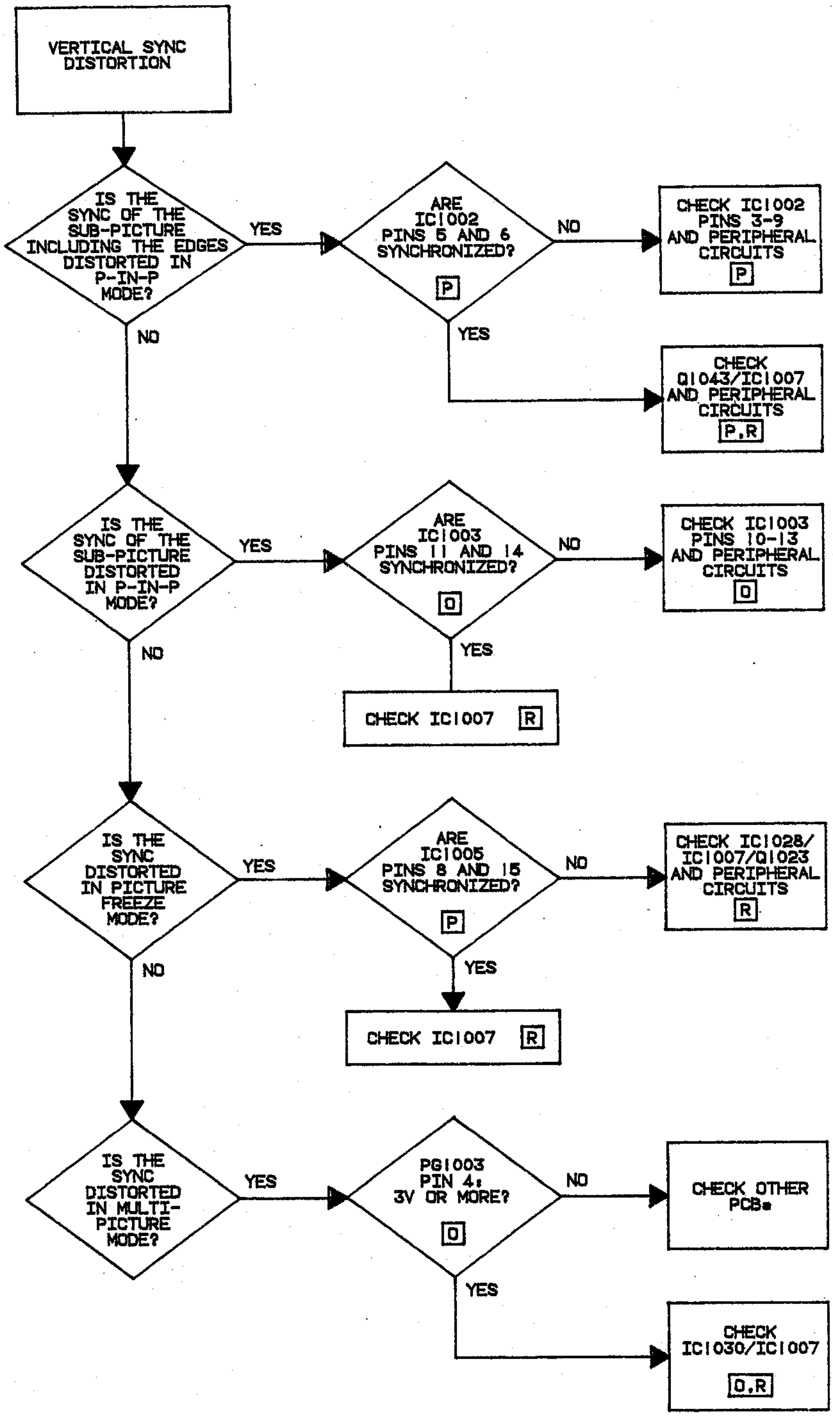
4. No colour in the digital picture.


NO COLOUR IN THE DIGITAL PICTURE
IC1006 PIN 5: CHROMA? O
NO
CHECK CP1002/C1083 AND PERIPHERAL CIRCUITS O
YES
IC1006 PIN 3: CHROMA? O
NO
IC1006 PIN 27: PULSE? O
NO
CHECK Q1029/Q1030 AND PERIPHERAL CIRCUITS O
YES
CHECK IC1006 PINS 1/2/29 AND PERIPHERAL CIRCUITS O
READJUST CT1002 O
YES
TP1007 & IC1001 PIN 1 COLOUR-DIFFERENCE SIGNAL? O
NO
CHECK IC1006/CP1003/CP1004 AND PERIPHERAL CIRCUITS O
YES
IC1012 PIN 15: COLOUR-DIFFERENCE SIGNAL? Q
NO
CHECK IC1001/IC1012 AND PERIPHERAL CIRCUITS O,Q
YES
IC1026/IC1027 PINS 3: COLOUR-DIFFERENCE SIGNAL? Q
NO
CHECK IC1018 AND PERIPHERAL CIRCUITS Q
CHECK IC1013-IC1015 AND PERIPHERAL CIRCUITS Q
CHECK IC1022-IC1024 AND PERIPHERAL CIRCUITS Q
CHECK IC1007 AND PERIPHERAL CIRCUITS R
YES
IC1005 PINS 1/24: COLOUR-DIFFERENCE SIGNAL? P
YES
A
NO
CHECK Q1019/Q1020 AND PERIPHERAL CIRCUITS P
A
IC1005 PINS 5/20: fsc CLOCK? P
NO
CHECK IC1004 AND PERIPHERAL CIRCUITS O
READJUST CT1001 O
YES
TP1011: CHROMA? P
NO
CHECK IC1005 AND PERIPHERAL CIRCUITS P
YES
IC1022 PIN 17: CHROMA? P
NO
CHECK C1005/C1008 AND PERIPHERAL CIRCUITS P
YES
IC1002 PIN 14: VIDEO? P
NO
CHECK IC1002 AND PERIPHERAL CIRCUITS P
YES
CHECK IC1003 AND PERIPHERAL CIRCUITS O

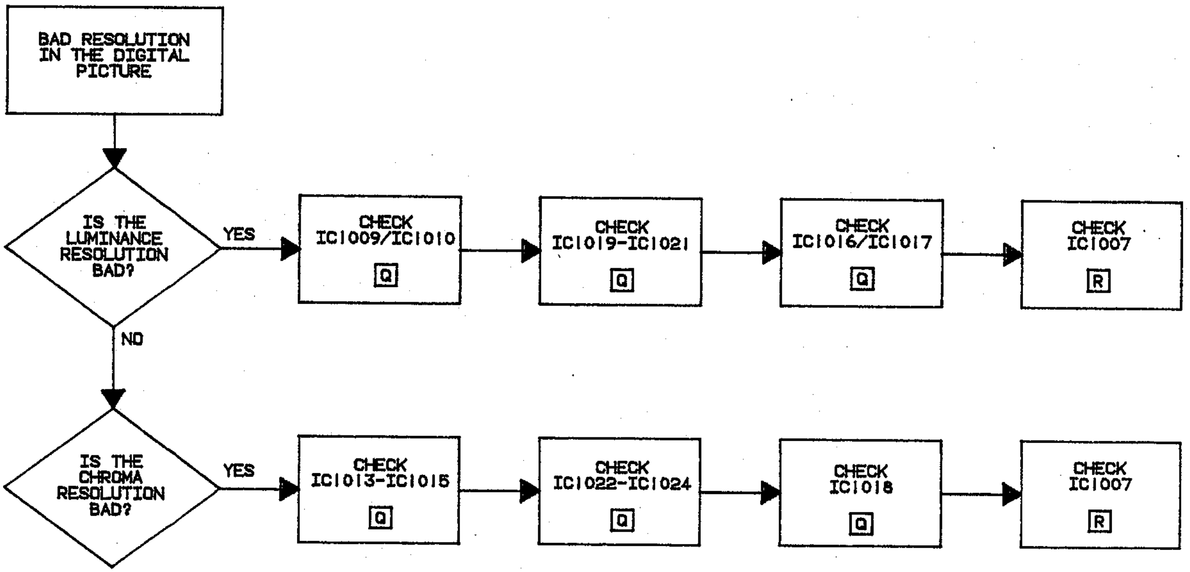
5. Horizontal sync distortion.


HORIZONTAL SYNC DISTORTION
IS THE SYNC OF THE SUB-PICTURE INCLUDING THE EDGES DISTORTED IN P-IN-P MODE?
YES
NO
ARE IC1002 PINS 5 AND 4 SYNCHRONIZED? P
NO
YES
CHECK IC1002 PINS 3-13 AND PERIPHERAL CIRCUITS P
CHECK Q1042/IC1007 AND PERIPHERAL CIRCUITS P,R
IS THE SYNC OF THE SUB-PICTURE DISTORTED IN P-IN-P MODE?
YES
NO
ARE IC1003 PINS 11 AND 9 SYNCHRONIZED? O
NO
YES
CHECK IC1003 PINS 4-14 AND PERIPHERAL CIRCUITS O
ARE IC1003 PIN 9 AND TP1004 SYNCHRONIZED? O
NO
YES
CHECK Q1191-Q1194 AND PERIPHERAL CIRCUITS O
ARE IC1007 PIN 1 AND TP1004 SYNCHRONIZED? O,R
NO
YES
CHECK Q1029/Q1030 AND PERIPHERAL CIRCUITS O
CHECK IC1007 R
IS THE SYNC DISTORTED IN PICTURE FREEZE MODE?
YES
NO
ARE IC1005 PINS 8 AND 15 SYNCHRONIZED? P
NO
YES
CHECK IC1028/IC1007/Q1023 AND PERIPHERAL CIRCUITS R
CHECK IC1007 R
IS THE SYNC DISTORTED IN MULTI-PICTURE MODE?
YES
PG1003 PIN 4: 3V OR MORE? O
NO
YES
CHECK OTHER PCBs
CHECK IC1030/IC1007 O,R

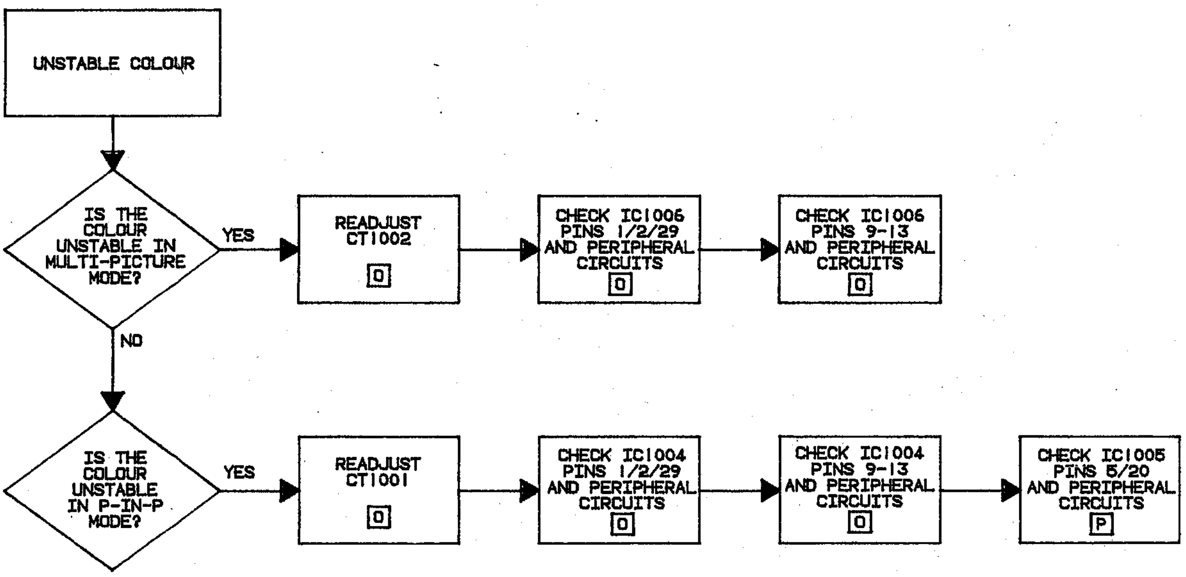
6. Vertical sync distortion.


VERTICAL SYNC DISTORTION
IS THE SYNC OF THE SUB-PICTURE INCLUDING THE EDGES DISTORTED IN P-IN-P MODE?
YES
ARE IC1002 PINS 5 AND 6 SYNCHRONIZED? P
NO
CHECK IC1002 PINS 3-9 AND PERIPHERAL CIRCUITS P
YES
CHECK Q1043/IC1007 AND PERIPHERAL CIRCUITS P,R
NO
IS THE SYNC OF THE SUB-PICTURE DISTORTED IN P-IN-P MODE?
YES
ARE IC1003 PINS 11 AND 14 SYNCHRONIZED? O
NO
CHECK IC1003 PINS 10-13 AND PERIPHERAL CIRCUITS O
YES
CHECK IC1007 R
NO
IS THE SYNC DISTORTED IN PICTURE FREEZE MODE?
YES
ARE IC1005 PINS 8 AND 15 SYNCHRONIZED? P
NO
CHECK IC1028/IC1007/Q1023 AND PERIPHERAL CIRCUITS R
YES
CHECK IC1007 R
NO
IS THE SYNC DISTORTED IN MULTI-PICTURE MODE?
YES
PG1003 PIN 4: 3V OR MORE? O
NO
CHECK OTHER PCBs
YES
CHECK IC1030/IC1007 O,R

7. Bad resolution in the digital picture.


BAD RESOLUTION IN THE DIGITAL PICTURE
IS THE LUMINANCE RESOLUTION BAD?
YES
CHECK IC1009/IC1010 Q
CHECK IC1019-IC1021 Q
CHECK IC1016/IC1017 Q
CHECK IC1007 R
NO
IS THE CHROMA RESOLUTION BAD?
YES
CHECK IC1013-IC1015 Q
CHECK IC1022-IC1024 Q
CHECK IC1018 Q
CHECK IC1007 R

8. Unstable colours.


UNSTABLE COLOUR
IS THE COLOUR UNSTABLE IN MULTI-PICTURE MODE?
YES
READJUST CT1002 O
CHECK IC1006 PINS 1/2/29 AND PERIPHERAL CIRCUITS O
CHECK IC1006 PINS 9-13 AND PERIPHERAL CIRCUITS O
NO
IS THE COLOUR UNSTABLE IN P-IN-P MODE?
YES
READJUST CT1001 O
CHECK IC1004 PINS 1/2/29 AND PERIPHERAL CIRCUITS O
CHECK IC1004 PINS 9-13 AND PERIPHERAL CIRCUITS O
CHECK IC1005 PINS 5/20 AND PERIPHERAL CIRCUITS P

9. Others

P-in-P mode

Phenomenon	Circuit causing fault	Parts to be checked
Edges and picture drifted	Sub picture output pulse shaper	Q1038-39, R1141-45, C1177-78 R
Cross colour in edges	Edge chroma level	IC1013-1015 Q
Sub picture flickering	Luminance D/A (IC1025)	R1175, D1007 Q
Sub picture is not black without input	Sub picture AFC (IC1003)	Q1191-93, R1191-93, 96 O
Colour leaks without input for sub picture	Sub picture decoder (IC1006)	Q1194, R1197 O
Rise of EE channel switching	Main/sub clamp (IC1003)	R1173-74, C1037, C1123 O
Tint drifted at high temperature	Sub picture decoder (IC1006)	Q1012, R1051 O
Chroma level drifted at high temperature	Sub picture decoder (IC1006)	D1006, R1101 O
White balance drifted at high temperature	Sub picture encoder (IC1005)	R1026, R1054 P
Tint not adjustable	Sub picture decoder (IC1006)	R1024-25, C1183-84 O
Whole sub picture green	D/A (IC1025-27)	IC1025-27 Q (ICs already changed)

Multi-picture mode

Phenomenon	Circuit causing fault	Parts to be checked
V sync missing in sub picture	IF µp (IC1008)	IC1008 (already changed) R
Edge positions not aligned	IF µp (IC1008)	IC1008 (already changed) R
Vertical white noise	Memory (IC1016-18)	IC1016-18 Q (ICs already changed)
Colours of 4/16 pictures not matched	Gate array (IC1007)	Q1025, 36, 52, C1175, R1022, R1126-28 O

Picture freeze

Phenomenon	Circuit causing fault	Parts to be checked
Skew across top of picture	Sub picture AFC (IC1003)	R1032-34, C1010-11 O
White dot noise at high temperature	Luminance A/D (IC1011)	C1194-95 Q
ID misjudging at high temperature	Decoder (IC1006, 4)	R1081, 1140 O

Surveys on IC pin descriptions
RMT (E-51IC3701)

Pin No.	*I/O*	*Active level*	*Abbreviation*	*Active function*
1			B5V	B5V is the supply voltage in stand-by and ON. Besides, there is a battery to achieve RAM backup when the mains voltage is disconnected.
2			GND	Chassis.
3			A5V	5 V supply voltage in stand-by and ON. There is no supply voltage at this pin when the mains voltage is disconnected.
4	I	pulse	RMT ACK	Timing of communication from TIM to RMT
5	O	pulse	DATA LINK	Transmits Link signals to other products there may be connected.
6	O	pulse	RMT REQ	Timing of communication from RMT to TIM.
7	I	pulse	DATA LINK	Receives Link signals from TV or possibly an IR receiver.
8	O	pulse	SW/OSD CLK	Supplies clock pulses for transmission of data to OSD and AV signal switching.
9	O	H	M RESET	Resets RMT at power-up, mains voltage drop-out and at mechanical loading/ stopping of fan motor.
11-18	I/O	pulse	D0---D7	8-bit parallel data communication between RMT and TIM.
19	O	L	OSD CS	Chip select of OSD for data transmission from RMT to OSD.
20	O	H	AV CONTROL	Supplies 12 V to AV connector in order to activate the AV function of the TV when an external transceiver is used.
21	O	H	SW ENABLE	Activates AV signal switching for data transmission from RMT to AUDIO LATCH.
22-26				Not used.

TIM (E-41IC701)

Pin No.	*I/O*	*Active level*	*Abbreviation*	*Active function*
1-4	O	pulse	MATRIX 3-0	Pulse train for scanning local function switches.
5	I	pulse	AC CLOCK	50 Hz clamped AC signal from mains (5 Vpp) for controlling internal hardware clock under normal operation (mains).
6	O	pulse	CTRL CLOCK	4 kHz clock pulse for controlling data transfers to display and AUDIO LATCH (IC505).
7	O	pulse	CTRL DATA	Transfer of data to display and AUDIO LATCH (IC505).
8	I	pulse	S. DATE	16-bit serial data transfer from SYC to TIM (also in stand-by). Pin 8 together with pin 9 (S.CKL) also produce start information on the 16-bit data transfer. These two signals are joined to achieve that pin 8 is HI in only one place during a 16-bit transfer, while at the same time there is a leading edge (LO to HI) at pin 9 (S.CLK).
9	I	pulse	S. CLK	250 Hz clock pulses for transfer of data between SYC and TIM. After the necessary start bits, data are read at both the T-data and S-data connections.
10	I	pulse	RMT REQ	Handshake connection between RMT and TIM for timing 8-bit parallel data.
11	I	pulse	TUN SYNC DET	TIM receives information that a station has been found when this pin goes HI via the Schmitt trigger in the PLL station detector in IC801.
12	I	pulse	S. CURVE	After channel switching/selection (pin 11 = HI), pin 12 will briefly "tilt" (HI/LO) in order to fine-tune the channel in steps of 100 kHz at first and then 50 kHz, and then it will stop HI when the correct setting has been achieved.
13-16	I	HI	KEY 0-3	Scanning input which operates together with matrix 0-5 and counter output.
17	O	pulse	T. DATA	16-bit serial data transfer from TIM to SYC (also in stand-by).
18	O	pulse	RMT ACK	Handshake connection between TIM and RMT for timing of 8-bit parallel data.
19	O	pulse	VPS CLK	Sync signal for timing of VPS data transfer.
20	I	pulse	VPS DATA	Data input from VPS decoder for checking a timer recording when using VPS.
21-28	I/O	pulse	D0---D7	Two-way 8-bit parallel data transfer between RMT and TIM, controlled by the handshake signals at the pins RMT REQ and RMT ACK.
29	O	pulse	TRACK	4 kHz tracking pulses for servo circuits. In tracking adjustment via remote control, the pulse/ pause ratio of 4 kHz is changed from minimum approx. 17% to maximum 100% (HI) - standard = approx. 25%.

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Pin No.	*I/O*	*Active level*	*Abbreviation*	*Active function*
30	I	AC	X1	4.19 MHz clock which starts when AC clock is applied at pin 5.
31	O	AC	X2	Output for pin 30.
32			GND	
33	I	AC	XT1	32.768 kHz (sub) system clock which is used as soon as the AC clock at pin 5 is removed (zero mains voltage). Supplies clock to the internal hardware clock in TIM.
34	O	AC	XT2	Output for pin 33.
35				Not used.
36	I	HI	OSD SYNC	Notifies TIM when sync has to be inserted in the OSD video signal artificially. This happens when a sufficient sync is not supplied or when there is no signal at the aerial input, for example.
37	I	pulse	C. DATA	Counts 16-bit data transfer intended as start information. The pulse occurs when a leading edge at pin 9 (clock pulse) occurs simultaneously with a start bit at pin 8.
38	I	HI	TP LOAD	A HI level at this pin tells TIM that the tape has been lashed.
39	I	LO	RESET	Erases the internal RAM in TIM (initializing). This pin does not go LO in a normal starting procedure, but only in the case of a manual reset.
40-49				Not used.
50	O	LO/HI	DIG EN	Activates either the digital box (LO) or the frequency synthesis section (HI) for transfer of data from TIM.
51	O	pulse	DIG DATA	Transfers data to the section which was activated via pin 50 (the digital box or F.S. tuning).
52	O	pulse	DIG CLK	Clocks data from TIM to either the digital box or F.S. tuning.
53	O	pulse	CTRL EN	Activates either the display section (HI) or AUDIO LATCH (LO) for transfer of data to the block in question from TIM.
54				Not used.
55	O	HI	MULTI	Tells the digital box that the multi-picture function (4, 9 or 16 pictures) has been selected.
56-57			GND	
58	O	pulse	COUNTER	Pulse train for determining country code (D751 and D752), VTR1 or VTR2 (D753) and VPS or non-VPS (D754).
59-61	O	pulse	MATRIX 8-6	Not used.

⇨

Pin No.	*I/O*	*Active level*	*Abbreviation*	*Active function*
62	O	pulse	MATRIX 5	Pulse train for scanning input from DECODER DET, STEREO, BILINGUAL and LINKSW.
63	O	pulse	MATRIX 4	Pulse train for changing the timer function from NORMAL CLOCK (1 sec. = 1 sec.) when D744 is *not* connected to FAST CLOCK (1 sec. = 1 min.) when D744 is connected.
64			VDD	

SYC (M-21IC901)

Pin No.	*I/O*	*Active level*	*Abbreviation*	*Active function*
1	O	HI	SLOW ACCEL	Executes an acceleration period in slow motion position.
2	O	HI	SLOW/PAUSE	Sets the servo circuit in pause and slow motion, and at the same time filters are engaged in the Y/C section and parts of the sound block are muted. Activates artificial sync and engages trick head.
3	O	HI	SLOW BRAKE	Tells the servo circuit when the tape has to stop/brake in slow motion. The deceleration time is generated by the servo circuit.
4	O	HI	PB	Sets the various signal and servo circuits ON, and starts the cylinder motor.
5	O	HI	REC	Sets the various signal and servo circuits ON and starts the cylinder motor for recording.
6	O	HI	POWER ON	Has the effect that voltage is supplied to the various circuits when the video tape recorder is switched on.
7	O	LO	ERASE	Activates the control of the erase oscillator. Control tracks and linear sound tracks cannot be erased during threading-in/out and in record pause, because the pin is HI in these situations.
8 9	O O	HI HI	MOTOR 1 MOTOR 2	These two pins put the tape transport mechanism into the selected function via the threading-in/out motor, at the same time monitoring the input pins 11, 12 and 13 from the state sensor (S143).
10	O	HI	REVERSE	Corrects cylinder speed during reverse search, reverses the capstan motor's direction of rotation and informs VISS (IC904) of the direction.
11 12 13	I I I	HI HI HI	MODE 3 MODE 2 MODE 1	Monitor the mechanical condition. The switches are located in a rotating unit which serves as an integrated unit together with the threading-in/out motor. The current input position gives an output at pins 8 and 9 for M-IC902 (motor drive).
14	O	HI	SEARCH	Sets the servo circuit in search position, and inserts filters in the Y/C signal path.
15				Not used.
16	O	HI	INDEX DATA	Informs the servo circuit of the time at which the duty cycle of the 25 Hz CTL signal has to be changed to 27.5% (HI) instead of normally approx. 60% (LO). This index information is recorded on the tape within the first approx. 2 seconds of each new recording.
17			NOT USED	Not used.

➪

Pin No.	*I/O*	*Active level*	*Abbreviation*	*Active function*
18	I	HI	NOISE IN	The servo section informs whether or not the first stop position in a still picture is O.K. If not, a HI level is applied to this pin and the microprocessor steps one field forward.
19			GND	
20	I	HI	DEW	Detects any condensation water via the moisture sensor located in the middle of the tape transport mechanism.
21	O	HI	A.DUB	Sets the linear audio circuit into the position audio DUB (thereby erasing any previous sound on the linear sound track, whereas video, Hi-Fi sound and control tracks are maintained).
22	I	PULSE	CTL PULSE	Pulse-shaped PB control pulses which are inverted during forward motion via IC904 (40% HI) and not inverted during reverse motion (i.e. 60% HI). – Determines the timing of the brake signal for the capstan motor at pin 3 in slow motion. – Registers the tape speed together with the C.FG signal at pin 33.
23	I	PULSE	SW 25Hz	– Registers variations of the 25 Hz frequency to determine whether the cylinder assembly is rotating correctly during recording and playback. – Determines the timing of the acceleration signal at pin 1 in slow motion. – Determines the timing in order to activate assemble mode.
24	O	HI	V.DUB	Informs the servo circuit of a possible INSERT.
25 26 27	O O O	HI HI HI	CAPST 1 CAPST 2 CAPST 3	Determine the capstan motor voltage in all positions other than record, playback and search.
28	O	HI	CAPST BRK	Applies approx. 1 V to the speed control input of the capstan motor driver (L- IC1601) for braking the capstan motor in positions other than record and playback.
29	O	HI	CAPST MODE	Sets the capstan servo circuit out of operation in positions other than playback, record and search. In such situations pins 25, 26 and 27 control the speed of the capstan motor.
30	O	HI	SWA 1	Corrects the cylinder speed for each picture step when the recorder is in slow motion.
31				Not used
32			VCC	

➪

Pin No.	*I/O*	*Active level*	*Abbreviation*	*Active function*
33	I	PULSE	C.FG	Tacho pulses from the capstan motor of approx. 1,515 Hz during playback, which control the following functions: – Stops loading/unloading if no tacho pulse is generated during this sequence. – Registers the tape speed (ATR/VTR) during playback together with pin 22 (CTL). – Determines the necessary part of the tape during record pause by counting the C.FG pulses up and down, thus to minimize signal overlapping as well as to achieve the best possible transition when playing back the two different recordings.
34	I	HI	INDEX CTL	When a HI level of more than 32 CTL pulses is applied to pin 34, the index counter in IC901 is notified that a track number has to be counted either up or down, depending on whether it is a forward or reverse motion. This information is given via pin 22.
35			SYN DET	Not used.
36	I	PULSE	DATA (T-S)	16-bit serial data transfer from TIM to SYC (also in stand-by).
37	O	PULSE	DATA (S-T)	16-bit serial data transfer from SYC to TIM (also in stand-by). Is only HI simultaneously with the leading edge of the clock pulse (pin 38) immediately before a 16-bit data transfer is started.
38	O	PULSE	(S-T)	250 Hz clock pulses from SYC to TIM in order to achieve a synchronous data transfer between these two processors.
39	O	PULSE	COUNT DATA	Output in order to be able to count the transferred bits in the 16-bit transfer. Is only HI immediately before a 16-bit transfer. During this HI period a HI level will also occur at pin 37 at the same time that a leading edge is applied to pin 38. Together, these three factors constitute the start information for the 16-bit transfer.
40	O	HI	CURRENT UP	In order to avoid colour noise during playback in the transition between two recordings, the recording current is increased for 3 seconds after assemble mode has been released in recording position and V.DUB. Furthermore, the speed of the threading-in motor is reduced by this pin when switching between fast forward picture search and reverse picture search, because a HI at the threading-in motor driver (M-IC902-4) reduces the output voltage from approx. 8 V to 6 V.

⇨

Pin No.	*I/O*	*Active level*	*Abbreviation*	*Active function*
41	O	HI	START-UP DELAY & REC.PAUSE	Mutes the video and audio signals during threading-in so that recording and playback hereof is impossible during this sequence (approx. 3 seconds) as well as during record pause.
42	O	HI	HQ OFF	Goes HI when HQ-OFF is activated, and has the effect that the noise reduction is disengaged in the Y signal path.
43			NOT USED	Not used.
44	O	HI	LINE/TUNER	Is active in simulcast and AUX position, and has the effect that the video tuner sound is muted and the sound from the external source is used instead. Furthermore, the signal for stereo detection is removed from the stereo decoder.
45 46	I I	PULSE PULSE	FWD END REW END	Register end of tape in forward (FWD) and reverse (REW) motion respectively via 250 Hz pulses from END LED to photo transistor and further on via the end sensor (IC903).
47 48	I I	PULSE PULSE	T.REEL S.REEL	Monitors the take-up of the tape by registering frequency changes from T.REEL (sensor for take-up reel). Calculates the remaining time (amount of tape) by checking the frequency from both the T.REEL (take-up reel) and the S.REEL (supply reel).
49	I	HI	RESET	Initializes the microprocessor, for example at power-up and in case of a fan motor overload.
50				Not used.
51 52	I O	PULSE PULSE	OSC 1 OSC 2	8 MHz crystal oscillator for connection of crystal.
53			GND	
54	I	HI	CASS.UP/DOWN	Registers when a new tape is loaded, and ensures correct elevator operation. This is achieved in the following way: – the pin is HI without tape – the tape is loaded (LO) – the cassette is moved into position (LO) – the cassette is in position (HI). The same happens in the reverse order at unloading.
55	I	LO	SAFETY TAB	Registers whether the tape is protected against recording (LO) or not (HI).
56	I	HI	C.PAUSE	Pause input from a video camera, if any, for remote control of the camera's pause function.

⇨

Pin No.	*I/O*	*Active level*	*Abbreviation*	*Active function*
57	O	HI	ASSEMBLE	Sets the servo circuit in assemble mode, meaning that this pin goes HI immediately before the start of the recording, hereby synchronizing the servo circuit with picture sync from the previous recording.
58	O	HI	TP LOAD	Informs TIM that the tape has been loaded (HI).
59	O	HI	MAIN MUTE	Mutes the sound during playback pause, slow motion, picture search and threading-in.
60				Not used.
61				Not used.
62				Not used.
63	O	HI	SPEED	Standard play goes HI in VTR position in order to inform the servo circuit that normal speed is used, and in order to permit tracking adjustment.
64	O	HI	ATR	Long-play goes HI in ATR position in order to inform the servo circuit that half speed is used.

INSULATION TEST

Each set must be insulation tested after having been dismantled. Make the test when the set has been reassembled and is ready to be returned to the customer.

Flashovers must not occur during the testing procedure!

Make the insulation test as follows:

Short-circuit the two pins of the mains plug and connect them to one of the terminals of the insulation tester. Connect the other terminal to one of the two antenna sockets.

NOTE!
To avoid damaging the set it is essential that both terminals of the insulation tester have good contact.

Slowly turn the voltage control of the insulation tester until a voltage of 1.5-2 kV is obtained. Maintain that voltage for one second, then slowly turn it down again.

Bang & Olufsen

Beocord VX 4500

NICAM 728

Beocord VX 5000 corrections

Beocord VX 5000 repair tips

Beocord VX 4500
Type 4560
B/G PAL/SECAM EAST modified
220V

Type 4562
I PAL
240V

Type 4563
B/G PAL/SECAM EAST modified
VPS
220V

Type 4567
B/G PAL/SECAM EAST modified
240V

Type 4568
I PAL
200V

NICAM 728 - VX 5000
Type 4531
B/G PAL/SECAM EAST modified
220V

Type 4534
B/G PAL/SECAM EAST modified
VPS
220V

Type 4539
I PAL
240V

NICAM 728 - VX 4500
Type 4561
B/G PAL/SECAM EAST modified
220V

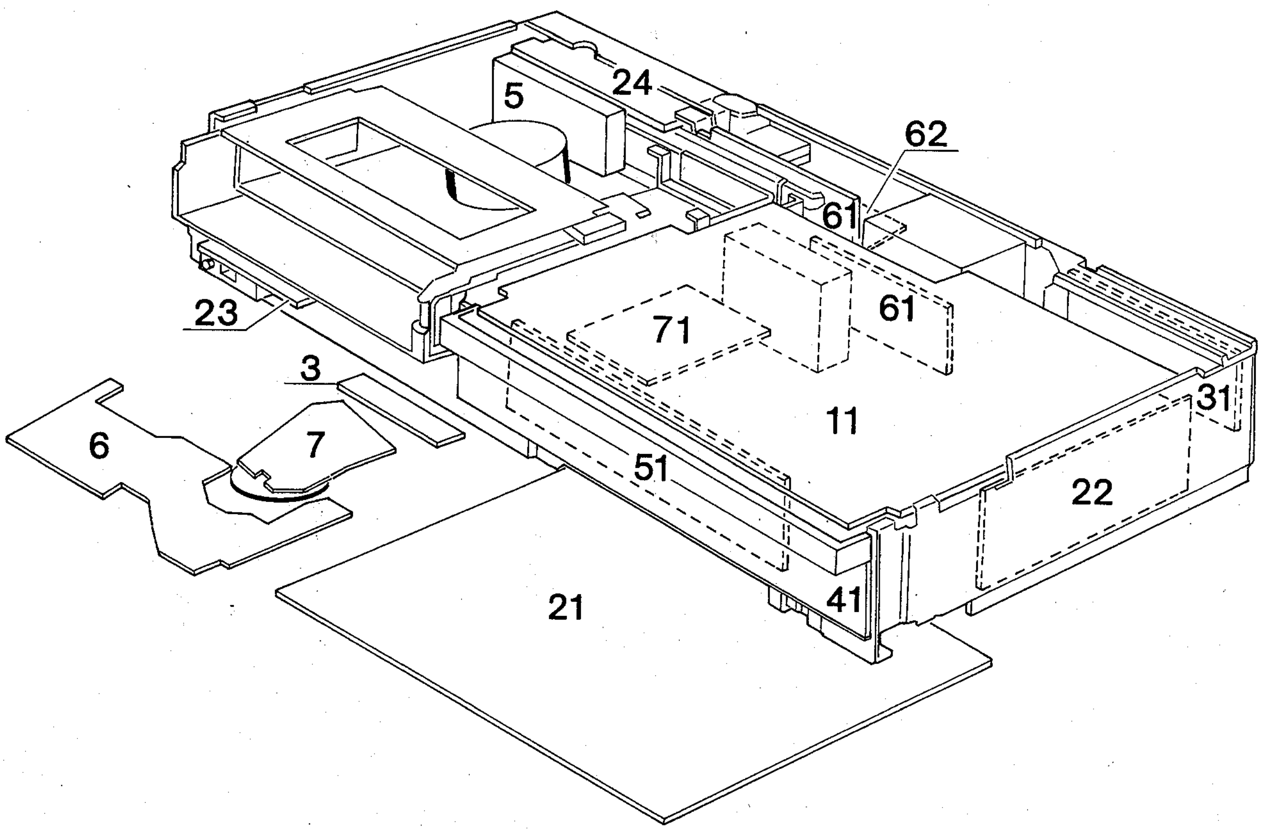
Type 4564
B/G PAL/SECAM EAST modified
VPS
220V

Type 4569
I PAL
240V

SERVICE MANUAL

09-90 3538763 Indklæbes i SERVICEANVISNING – BEOCORD VX 5000 (3538736)
To paste into SERVICE MANUAL – BEOCORD VX 5000 (3538737)
Zum Einkleben in der SERVICEANLEITUNG – VX 5000 (3538738)

3	Battery	diagr. E	page 2-19,20
5	Pre/Rec Amp.	diagr. I	page 2-25
6	Sensor	diagr. L-M	page 2-28,29
7	Capstan Motor	diagr. L	page 2-28
11	Y/Chroma & Signal Switch	diagr. F-H diagr. G	page 2-21,22,24 page 9-3
21	Main (Servo, HiFi Audio & System Control)	diagr. J-K-L-N diagr. M	page 2-26,27,28,30 page 9-4
22	Audio NR	diagr. N	page 2-30
23	Mic & Headphone	diagr. J	page 2-26
24	RF Signal	diagr. D	page 2-18
31	Input Socket Panel, Rear	diagr. D	page 2-18
41	Operation Control	diagr. E	page 2-19,20
51	Remote, Switch & OSD Control	diagr. E	page 2-19,20
61	Rectifier	diagr. S	page 9-5
62	5V/12V Power Supply	diagr. S	page 9-5
71	Timer Sub & OSD Sync. Insert	diagr. T	page 2-38
	RF Modulator & Booster	diagr. A	page 2-15
	IF Pack	diagr. B	page 2-16
	Tuner Pack	diagr. C	page 2-17



WIRING DIAGRAM

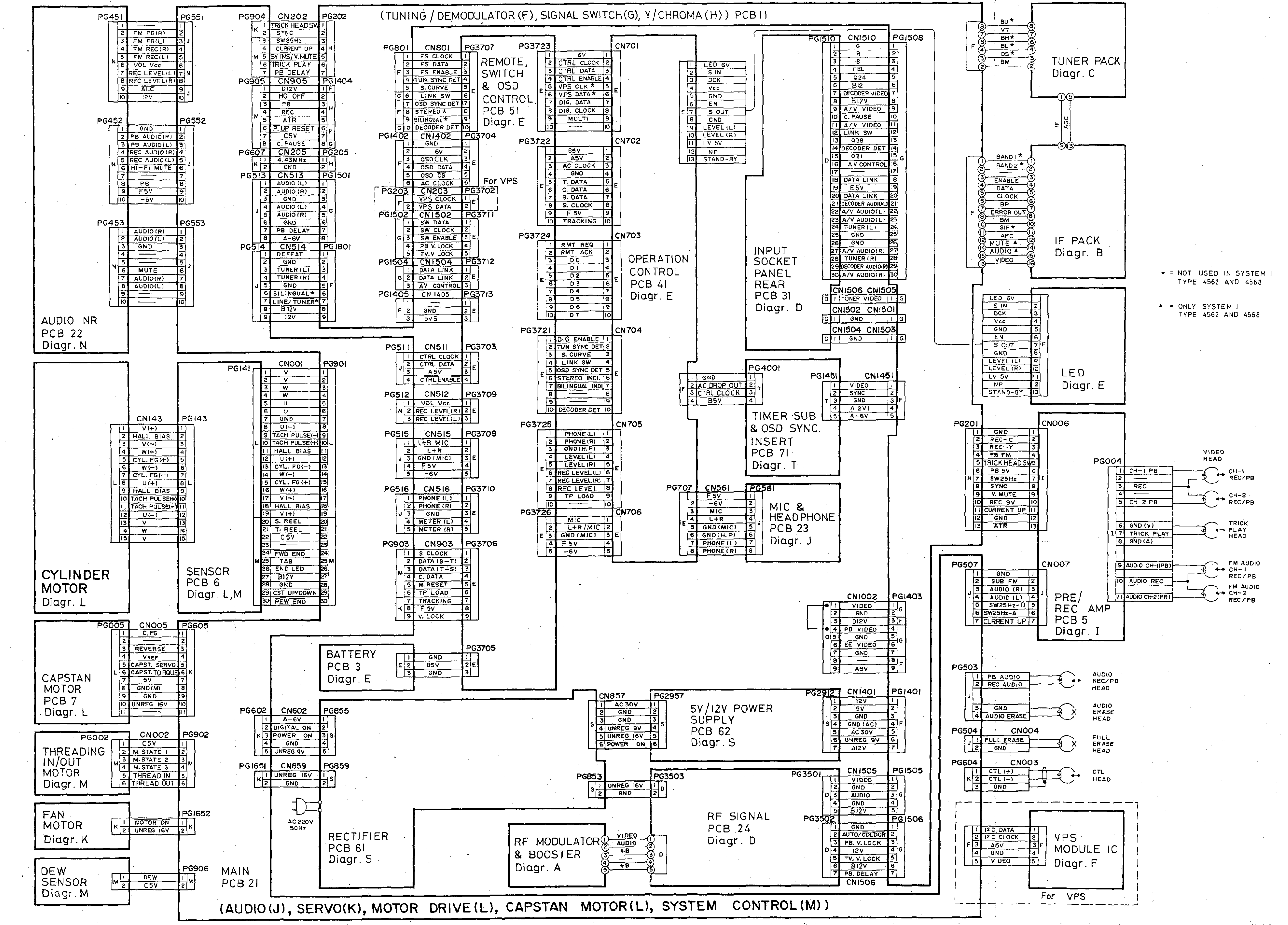

(TUNING / DEMODULATOR (F), SIGNAL SWITCH (G), Y/CHROMA (H)) PCB 11
(AUDIO (J), SERVO (K), MOTOR DRIVE (L), CAPSTAN MOTOR (L), SYSTEM CONTROL (M))
MAIN PCB 21
AUDIO NR PCB 22 Diagr. N
CYLINDER MOTOR Diagr. L
SENSOR PCB 6 Diagr. L,M
CAPSTAN MOTOR PCB 7 Diagr. L
THREADING IN/OUT MOTOR Diagr. M
FAN MOTOR Diagr. K
DEW SENSOR Diagr. M
REMOTE, SWITCH & OSD CONTROL PCB 51 Diagr. E
For VPS
OPERATION CONTROL PCB 41 Diagr. E
INPUT SOCKET PANEL REAR PCB 31 Diagr. D
TIMER SUB & OSD SYNC. INSERT PCB 71 Diagr. T
MIC & HEADPHONE PCB 23 Diagr. J
BATTERY PCB 3 Diagr. E
RECTIFIER PCB 61 Diagr. S
AC 220V 50Hz
5V/12V POWER SUPPLY PCB 62 Diagr. S
RF MODULATOR & BOOSTER Diagr. A
RF SIGNAL PCB 24 Diagr. D
TUNER PACK Diagr. C
IF PACK Diagr. B
LED Diagr. E
PRE/ REC AMP PCB 5 Diagr. I
VPS MODULE IC Diagr. F
For VPS
VIDEO HEAD
CH-1 REC/PB
CH-2 REC/PB
TRICK PLAY HEAD
FM AUDIO CH-1 REC/PB
FM AUDIO CH-2 REC/PB
AUDIO REC/PB HEAD
AUDIO ERASE HEAD
FULL ERASE HEAD
CTL HEAD
* = NOT USED IN SYSTEM I TYPE 4562 AND 4568
▲ = ONLY SYSTEM I TYPE 4562 AND 4568
PG451 PG551 PG452 PG552 PG453 PG553
PG904 CN202 PG202 PG905 CN905 PG1404 PG607 CN205 PG205 PG513 CN513 PG1501 PG514 CN514 PG1801
PG801 CN801 PG3707 PG1402 CN1402 PG3704 PG203 CN203 PG3702 PG1502 CN1502 PG3711 PG1504 CN1504 PG3712 PG1405 CN1405 PG3713
PG511 CN511 PG3703 PG512 CN512 PG3709 PG515 CN515 PG3708 PG516 CN516 PG3710 PG903 CN903 PG3706 PG3705
PG3723 CN701 PG3722 CN702 PG3724 CN703 PG3721 CN704 PG3725 CN705 PG3726 CN706
PG1510 CN1510 PG1508 CN1506 CN1505 CN1502 CN1501 CN1504 CN1503
PG4001 PG1451 CN1451 PG707 CN561 PG561
PG141 CN001 PG901 CN143 PG143
PG005 CN005 PG605 PG002 CN002 PG902 PG1652 PG906
PG602 CN602 PG855 PG1651 CN859 PG859
CN857 PG2957 PG2912 CN1401 PG1401 PG853 PG3503 PG3501 CN1505 PG1505 PG3502 PG1506 CN1506
CN1002 PG1403
PG201 CN006 PG004 PG507 CN007 PG503 PG504 CN004 PG604 CN003

DIAGRAM G AUDIO & VIDEO SIGNAL SWITCH

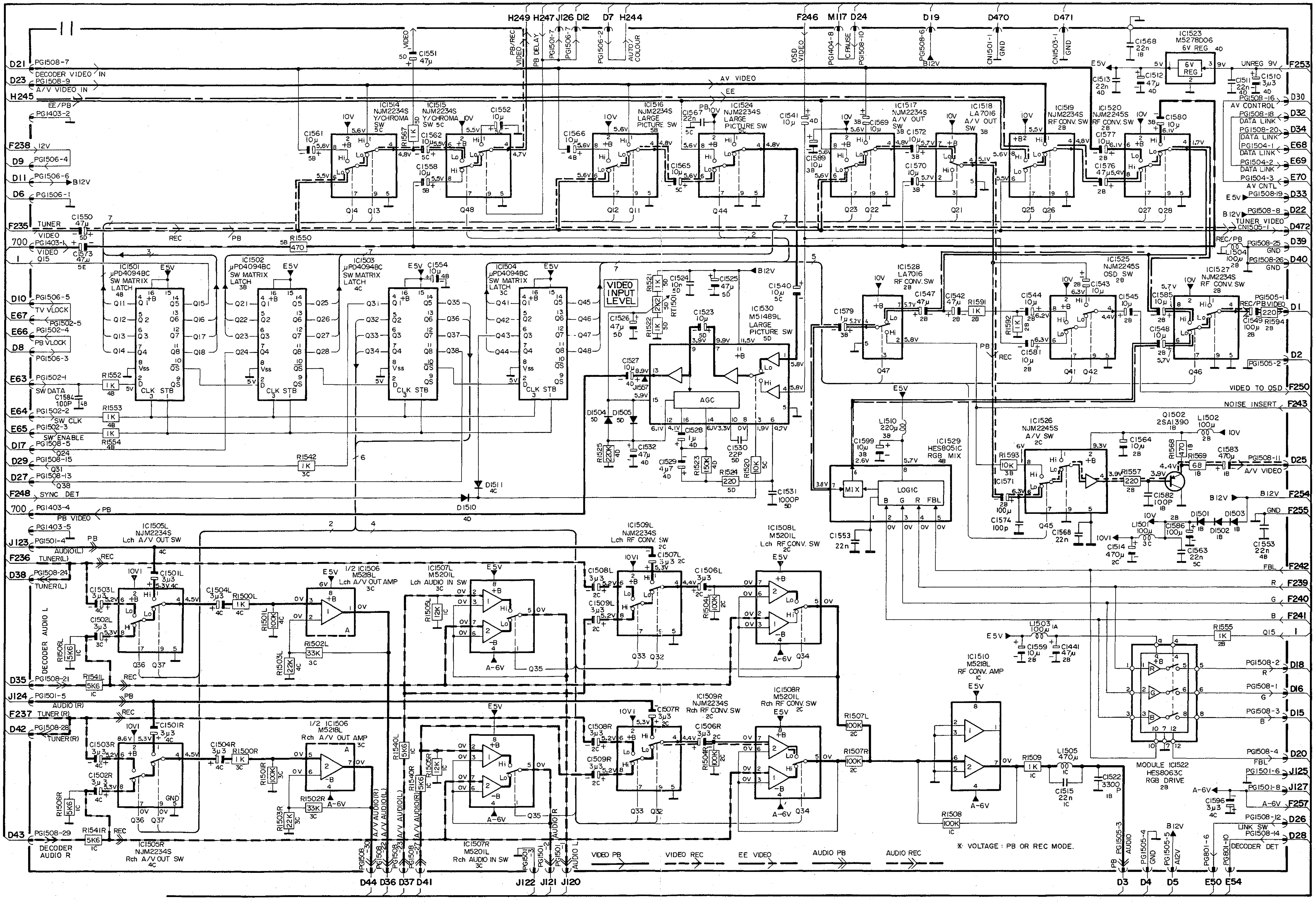
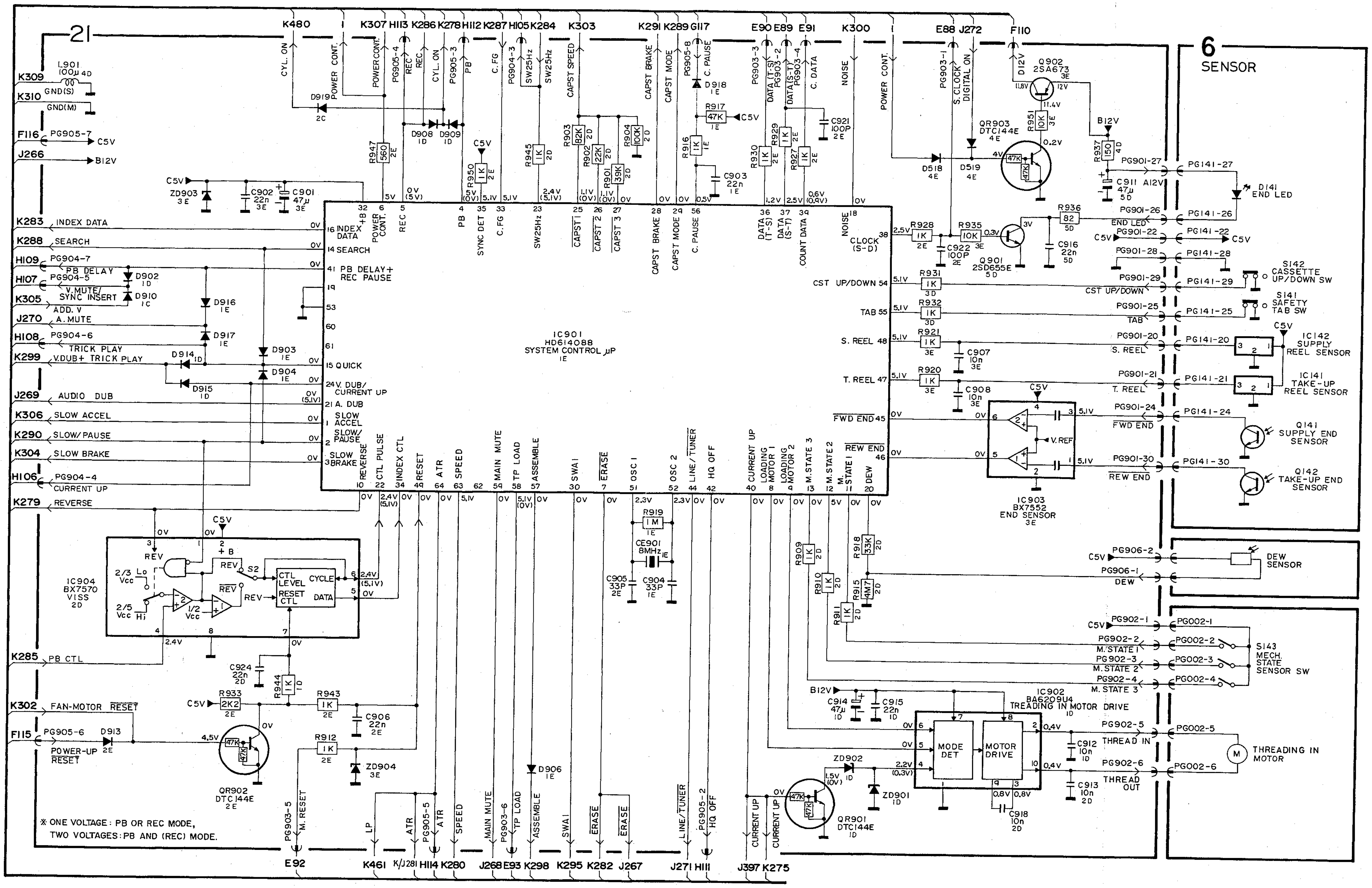
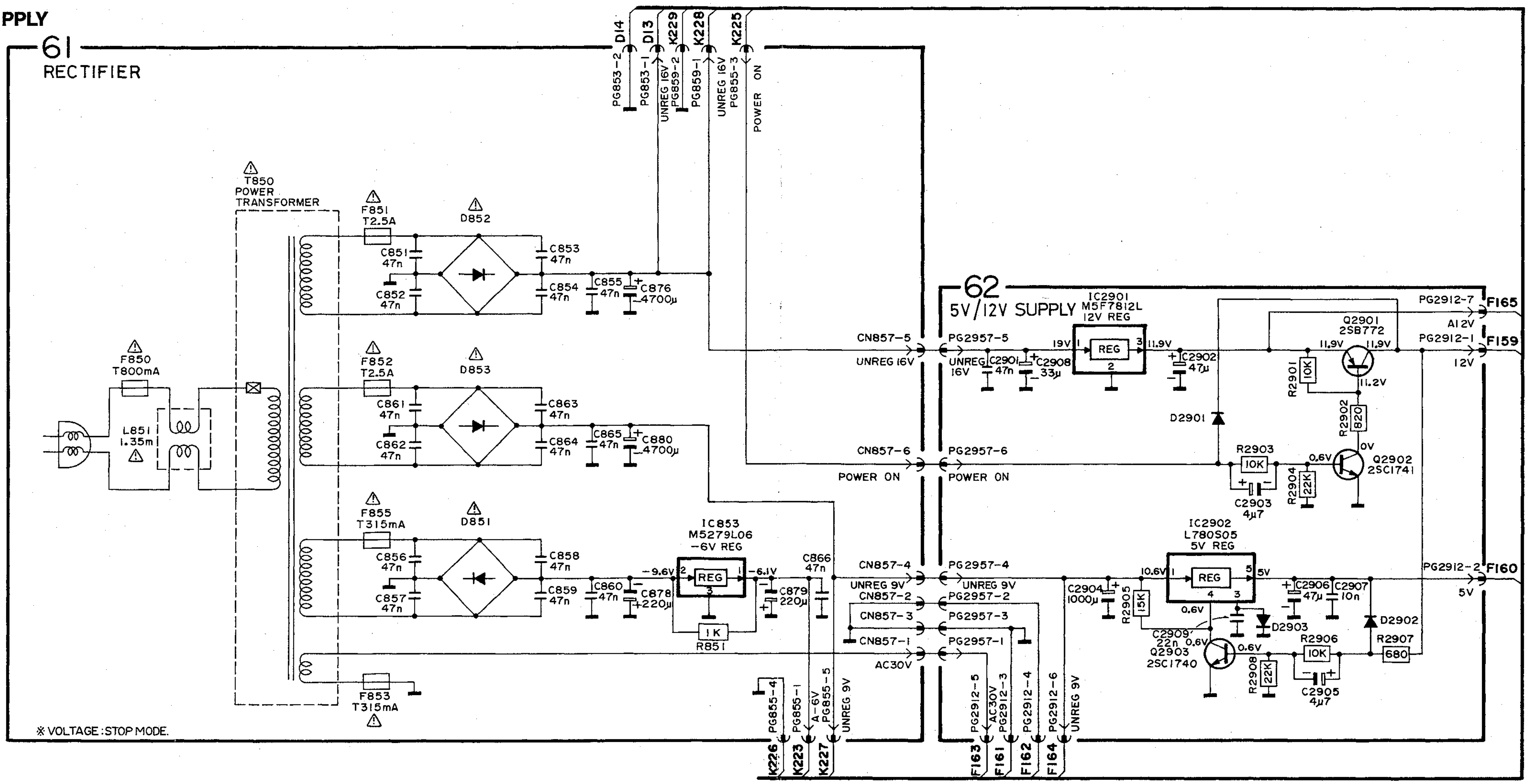

H249 H247 J126 D12 D7 H244
F246 M117 D24 D19 D470 D471
D21 PG1508-7 DECODER VIDEO IN
D23 PG1508-9 A/V VIDEO IN
H245 EE/PB
PG1403-2
F238 12V
D9 PG1506-4
D11 PG1506-6 B12V
D6 PG1506-1
F235 TUNER VIDEO
700 PG1403-1 VIDEO Q15
I
D10 PG1506-5
E67 TV VLOCK
E66 PG1502-4
D8 PB VLOCK PG1506-3
E63 PG1502-1 SW DATA
E64 PG1502-2 SW CLK
E65 PG1502-3 SW ENABLE
D17 PG1508-5 Q24
D29 PG1508-15 Q31
D27 PG1508-13 Q38
F248 SYNC DET
700 PG1403-4 PB VIDEO
PG1403-5
J123 PG1501-4 PB AUDIO(L)
F236 TUNER(L) REC
D38 PG1508-24 TUNER(L)
DECODER AUDIO L
D35 PG1508-21
J124 PG1501-5 PB AUDIO (R)
F237 TUNER (R) REC
D42 PG1508-28 TUNER(R)
D43 PG1508-29 DECODER AUDIO R
IC1514 NJM2234S Y/CHROMA SW
IC1515 NJM2234S Y/CHROMA SW
IC1516 NJM2234S LARGE PICTURE SW
IC1524 NJM2234S LARGE PICTURE SW
IC1517 NJM2234S A/V OUT SW
IC1518 LA7016 A/V OUT SW
IC1519 NJM2245S RF CONV. SW
IC1520 NJM2245S RF CONV. SW
IC1523 M5278D06 6V REG
IC1501 µPD4094BC SW MATRIX LATCH
IC1502 µPD4094BC SW MATRIX LATCH
IC1503 µPD4094BC SW MATRIX LATCH
IC1504 µPD4094BC SW MATRIX LATCH
VIDEO INPUT LEVEL
IC1530 M51489L LARGE PICTURE SW
AGC
IC1528 LA7016 RF CONV. SW
IC1525 NJM2245S OSD SW
IC1527 NJM2234S RF CONV. SW
IC1529 HES8051C RGB MIX
MIX LOGIC
IC1526 NJM2245S A/V SW
Q1502 2SA1390
IC1505L NJM2234S Lch A/V OUT SW
1/2 IC1506 M5218L Lch A/V OUT AMP
IC1507L M5201L Lch AUDIO IN SW
IC1509L NJM2234S Lch RF CONV. SW
IC1508L M5201L Lch RF CONV. SW
IC1505R NJM2234S Rch A/V OUT SW
1/2 IC1506 M5218L Rch A/V OUT AMP
IC1507R M5201L Rch AUDIO IN SW
IC1509R NJM2234S Rch RF CONV. SW
IC1508R M5201L Rch RF CONV. SW
IC1510 M5218L RF CONV. AMP
MODULE IC1522 HES8063C RGB DRIVE
F253 UNREG 9V
D30 AV CONTROL PG1508-16
D32 PG1508-18 DATA LINK
D34 PG1508-20 DATA LINK
E68 PG1504-1 DATA LINK
E69 PG1504-2 DATA LINK
E70 PG1504-3 AV CNTL
D33 E5V PG1508-19
D22 B12V PG1508-8
D472 TUNER VIDEO CN1505-1
D39 REC/PB PG1508-25 GND
D40 PG1508-26 GND
D1 PG1505-1 REC/PB VIDEO
D2 PG1505-2
F250 VIDEO TO OSD
F243 NOISE INSERT
D25 PG1508-11 A/V VIDEO
F254 B12V
F255 GND
F242 FBL
F239 R
F240 G
F241 B
I Q15
D18 PG1508-2 R
D16 PG1508-1 G
D15 PG1508-3 B
D20 PG1508-4 FBL
J125 PG1501-6
J127 PG1501-8
F257 A-6V
D26 PG1508-12 LINK SW
D28 PG1508-14 DECODER DET
D44 D36 D37 D41 J122 J121 J120
D3 D4 D5 E50 E54
PB AUDIO PG1505-3
GND PG1505-4
A12V PG1505-5
PG801-6 PG801-10
VIDEO PB
VIDEO REC
EE VIDEO
AUDIO PB
AUDIO REC
✕ VOLTAGE : PB OR REC MODE.

DIAGRAM M SYSTEM CONTROL


21
6
SENSOR
IC901
HD614088
SYSTEM CONTROL µP
1E
IC904
BX7570
VISS
2D
IC903
BX7552
END SENSOR
3E
IC902
BA6209U4
TREADING IN MOTOR DRIVE
1D
MODE DET
MOTOR DRIVE
Q902
2SA673
QR903
DTC144E
Q901
2SD655E
QR902
DTC144E
QR901
DTC144E
CE901
8MHz
K309
K310
F116
J266
K283 INDEX DATA
K288 SEARCH
H109 PG904-7 PB DELAY
H107 PG904-5 V.MUTE/SYNC INSERT
K305 ADD. V
J270 A. MUTE
H108 PG904-6 TRICK PLAY
K299 V.DUB+ TRICK PLAY
J269 AUDIO DUB
K306 SLOW ACCEL
K290 SLOW/PAUSE
K304 SLOW BRAKE
H106 PG904-4 CURRENT UP
K279 REVERSE
K285 PB CTL
K302 FAN-MOTOR RESET
F115 PG905-6 POWER-UP RESET
K480 K307 H113 K286 K278 H112 K287 H105 K284 K303 K291 K289 G117 E90 E89 E91 K300 E88 J272 F110
CYL. ON
POWER CONT.
REC
PB
C.FG
SW25Hz
CAPST SPEED
CAPST BRAKE
CAPST MODE
C. PAUSE
DATA (T-S)
DATA (S-T)
C. DATA
NOISE
S.CLOCK
DIGITAL ON
CST UP/DOWN
TAB
S. REEL
T. REEL
FWD END
REW END
E92 K461 K/J281 H114 K280 J268 E93 K298 K295 K282 J267 J271 H111 J397 K275
M. RESET
LP
ATR
SPEED
MAIN MUTE
TP LOAD
ASSEMBLE
SWA1
ERASE
LINE/TUNER
HQ OFF
CURRENT UP
D141 END LED
S142 CASSETTE UP/DOWN SW
S141 SAFETY TAB SW
IC142 SUPPLY REEL SENSOR
IC141 TAKE-UP REEL SENSOR
Q141 SUPPLY END SENSOR
Q142 TAKE-UP END SENSOR
DEW SENSOR
S143 MECH. STATE SENSOR SW
M. STATE 1
M. STATE 2
M. STATE 3
THREAD IN
THREAD OUT
THREADING IN MOTOR
PG901-27 PG141-27
PG901-26 PG141-26
PG901-22 PG141-22
PG901-28 PG141-28
PG901-29 PG141-29
PG901-25 PG141-25
PG901-20 PG141-20
PG901-21 PG141-21
PG901-24 PG141-24
PG901-30 PG141-30
PG906-2 PG906-1
PG902-1 PG002-1
PG902-2 PG002-2
PG902-3 PG002-3
PG902-4 PG002-4
PG902-5 PG002-5
PG902-6 PG002-6

※ ONE VOLTAGE : PB OR REC MODE,
TWO VOLTAGES : PB AND (REC) MODE.

DIAGRAM S POWER SUPPLY

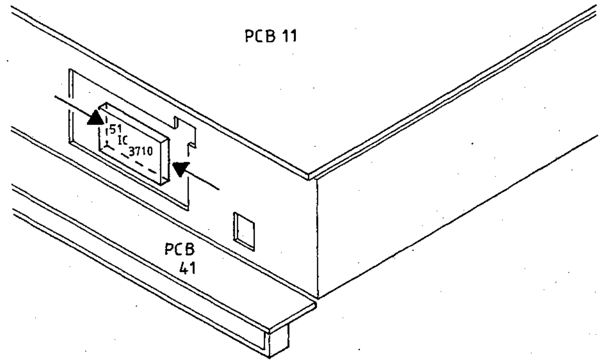

61
RECTIFIER
62
5V/12V SUPPLY
D14
D13
K229
K228
K225
PG853-2
PG853-1
UNREG 16V
PG859-2
PG859-1
UNREG 16V
PG855-3
POWER ON
T850
POWER TRANSFORMER
F850
T800mA
L851
1.35m
F851
T2.5A
F852
T2.5A
F855
T315mA
F853
T315mA
D852
D853
D851
C851 47n
C852 47n
C853 47n
C854 47n
C855 47n
C876 4700µ
C861 47n
C862 47n
C863 47n
C864 47n
C865 47n
C880 4700µ
C856 47n
C857 47n
C858 47n
C859 47n
C860 47n
C878 220µ
IC853
M5279L06
-6V REG
-9.6V
-6.1V
REG
C879 220µ
C866 47n
1K
R851
CN857-5
UNREG 16V
CN857-6
POWER ON
CN857-4
UNREG 9V
CN857-2
CN857-3
CN857-1
AC30V
PG2957-5
UNREG 16V
C2901 47n
C2908 33µ
IC2901
M5F7812L
12V REG
19V
11.9V
C2902 47µ
PG2957-6
POWER ON
PG2957-4
UNREG 9V
PG2957-2
PG2957-3
PG2957-1
C2904 1000µ
10.6V
IC2902
L78OS05
5V REG
5V
0.6V
R2905 15K
C2909 22n
Q2903
2SC1740
R2908 22K
C2906 47µ
C2907 10n
D2903
R2906 10K
C2905 4µ7
D2902
R2907 680
D2901
Q2901
2SB772
11.9V
11.2V
R2901 10K
R2902 820
0V
Q2902
2SC1741
R2903 10K
0.6V
R2904 22K
C2903 4µ7
PG2912-7
A12V
F165
PG2912-1
12V
F159
PG2912-2
5V
F160
PG855-4
PG855-1
A-6V
PG855-5
UNREG 9V
K226
K223
K227
PG2912-5
AC30V
PG2912-3
PG2912-4
PG2912-6
UNREG 9V
F163
F161
F162
F164
※VOLTAGE:STOP MODE.

LIST OF ELECTRICAL PARTS
PCB51, 8004788
Remote, Switch & OSD Control

IC3710*△	8341565	**136**	27C512

PCB51 and IC3710
Please note, that if you order PCB51 or IC3710, it will be supplied without SW IC3710.

Replacing 51IC3710
When replacing the software 51IC3710, be very careful not to damage the SMD components or the very thin copper foil underneath the software IC. Do not use a screwdriver to loosen the IC from the socket. Use e.g. angled tweezers.


PCB 11
51
IC
3710
PCB
41

All other parts are identical with chapter 3.

* Specially selected or adapted sample.

△ indicates that static electricity may destroy the component.

LIST OF MECHANICAL PARTS
Main assembly
(Exploded view see page 4-1)

101	3164867	Top cover, black
107	3168946	Front panel, black
111	3168944	Side panel, left, black
112	3168945	Side panel, right, black
159	3168951	Secondary door, black
165	3152818	Hinge, black

All other parts are identical with chapter 4.

NICAM 728 – VX 5000	**See page 1-1**
NICAM 728 – VX 4500	**See page 9-1**
PCB 8 Nicam	**diagr. Y** **page 10-3**
PCB 9 Nicam Sound Mixer	**diagr. X** **page 10-2**

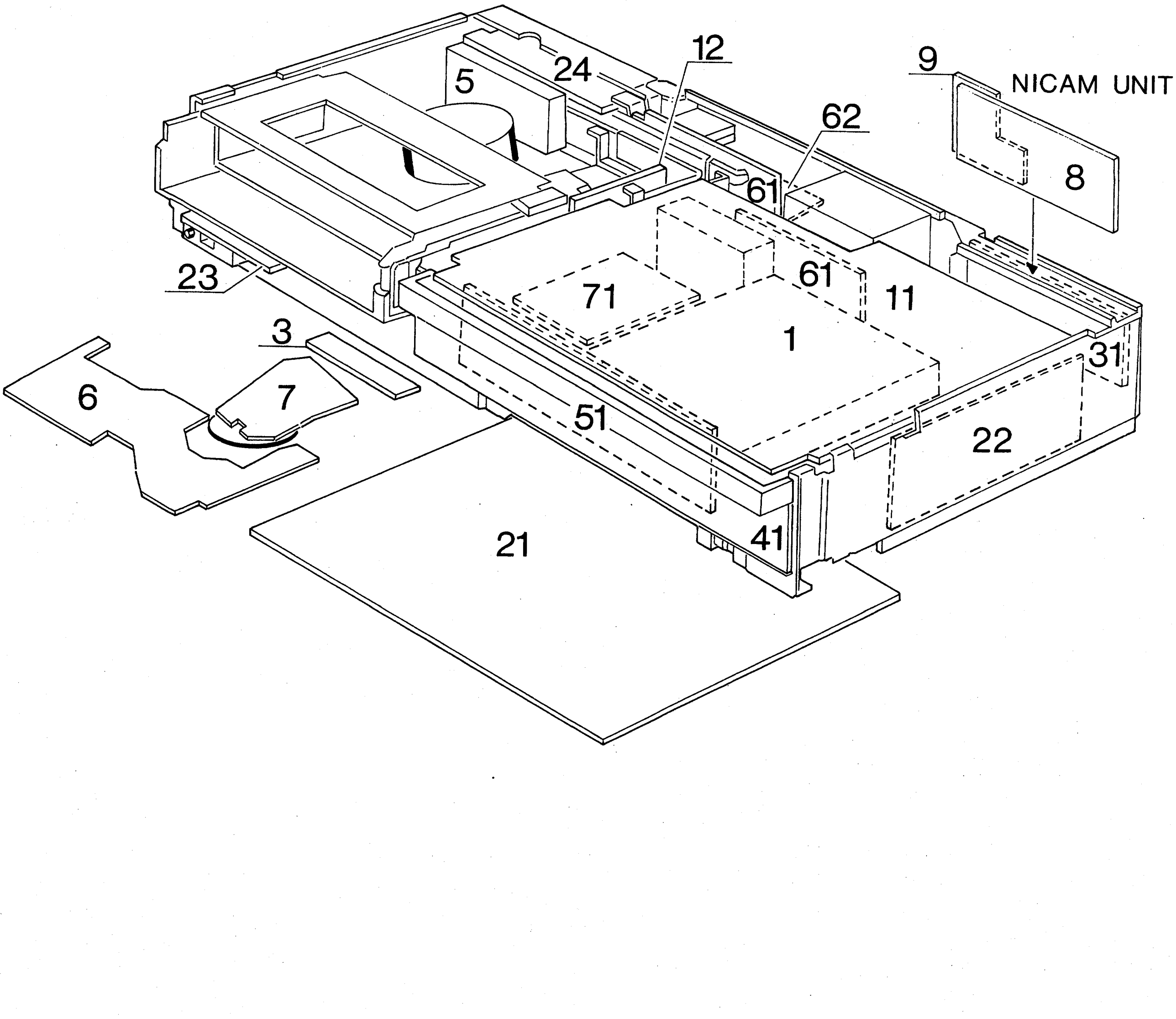

12
9
NICAM UNIT
24
5
62
61
8
61
11
23
71
1
3
31
6
7
51
22
21
41

DIAGRAM X NICAM SOUND MIXER

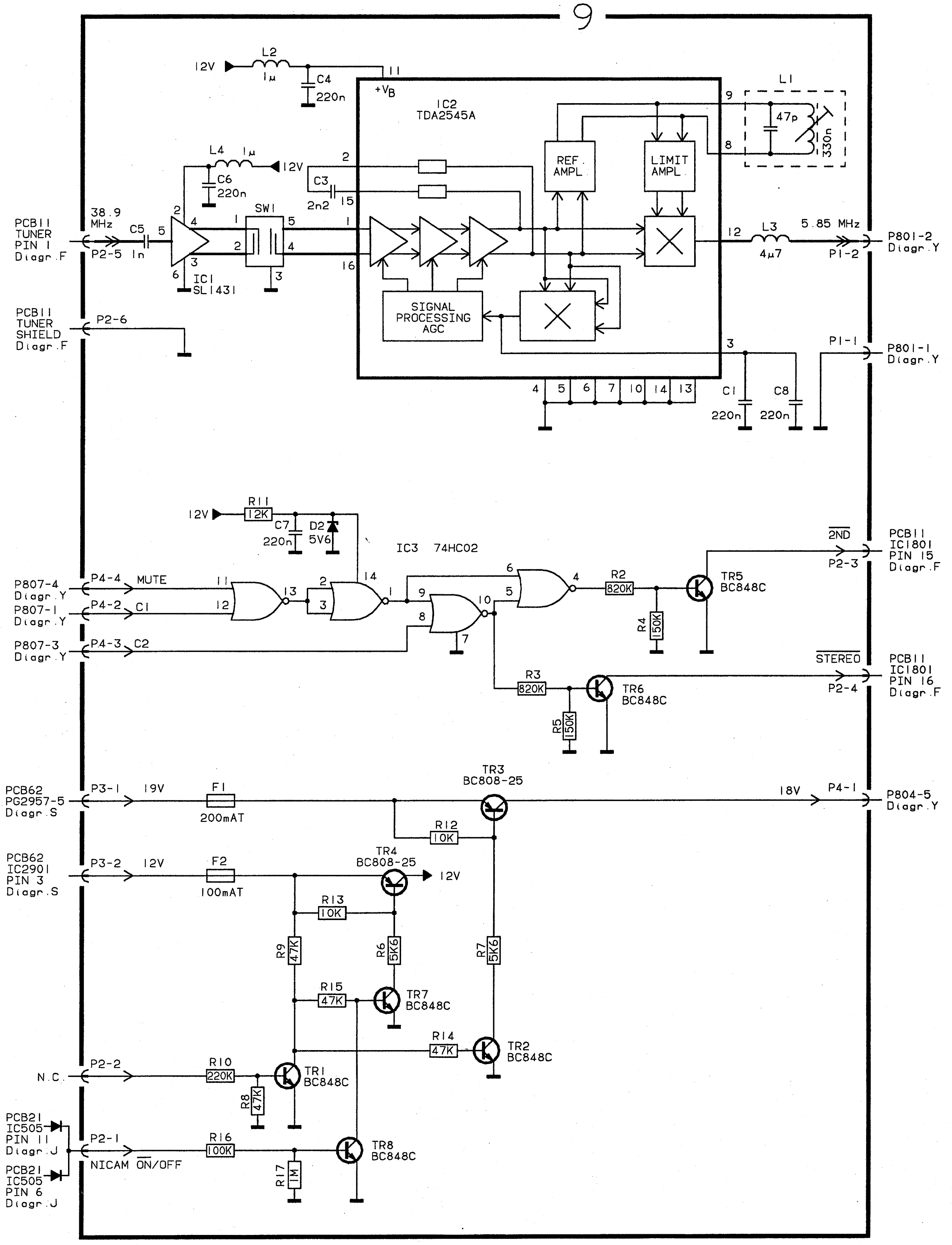
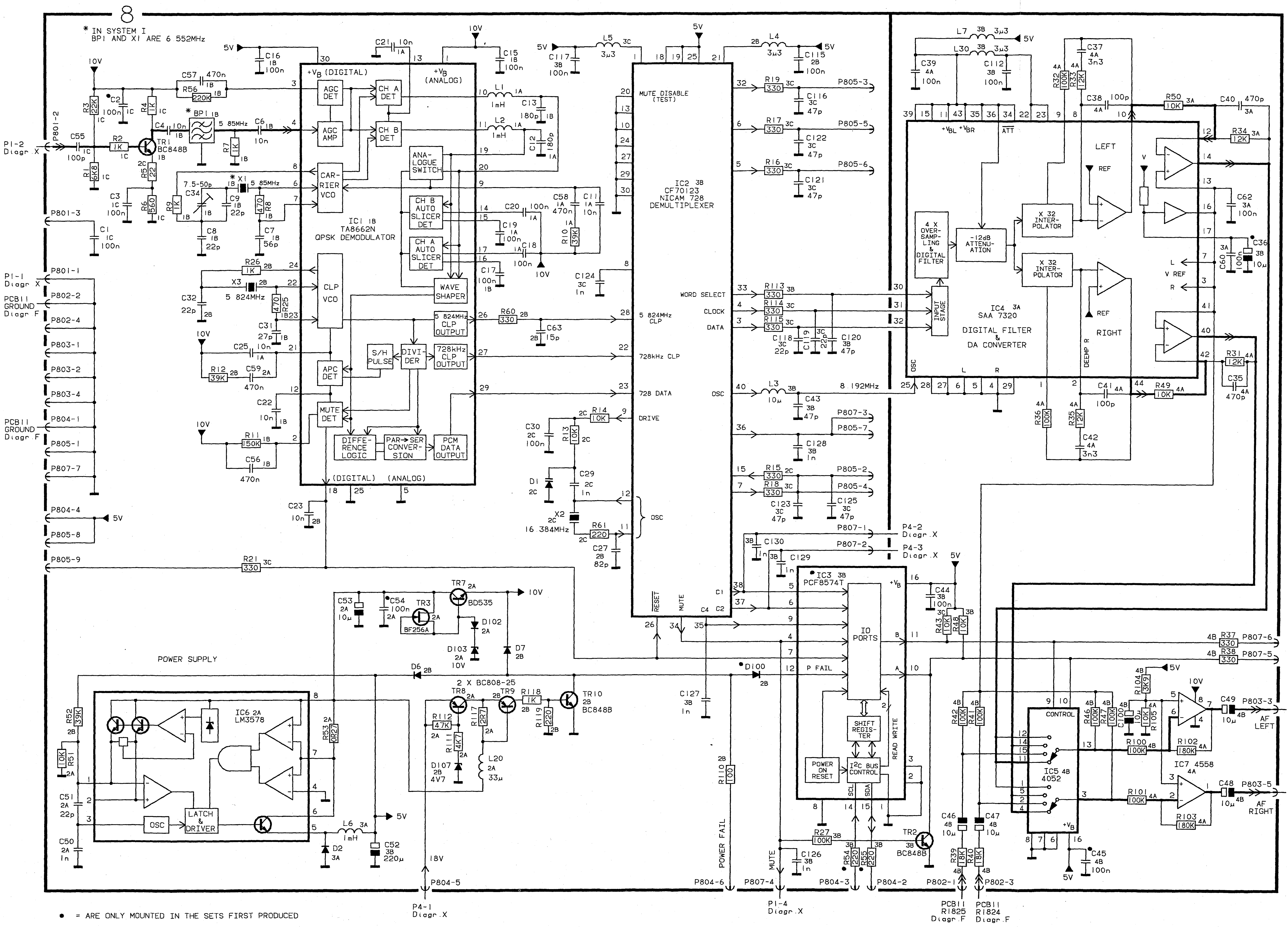
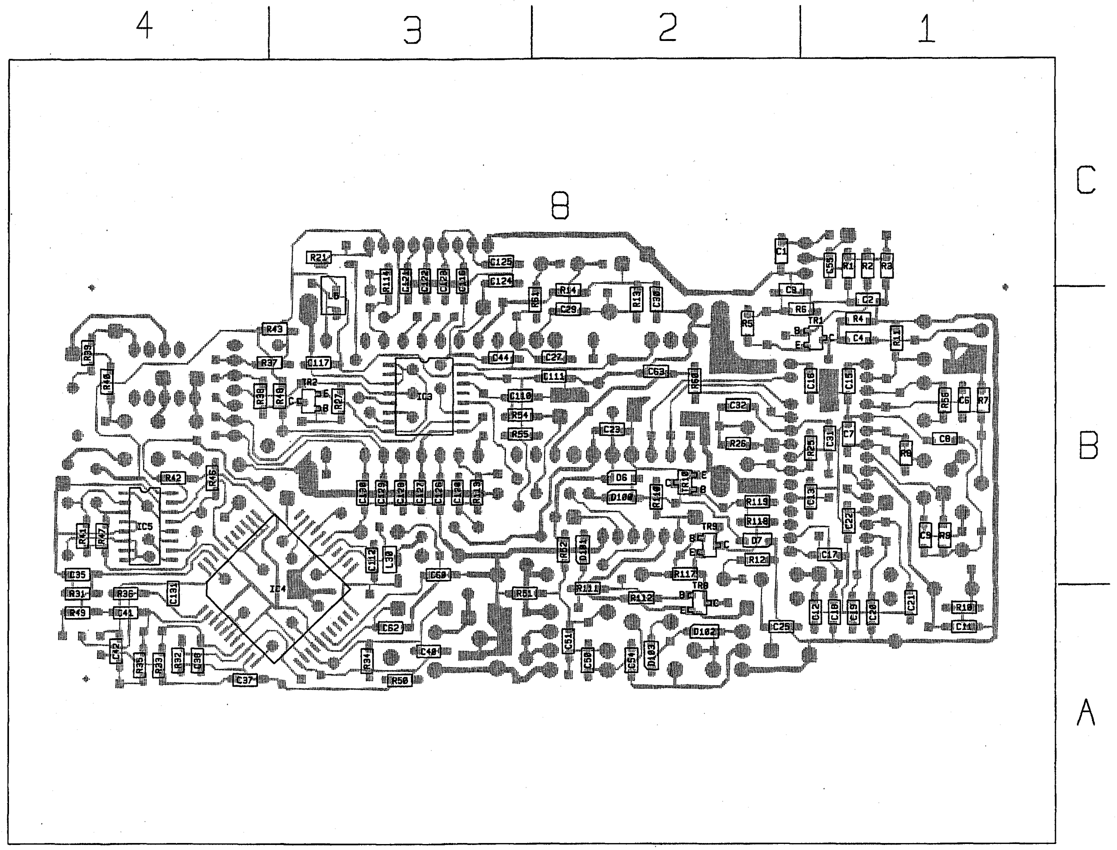

9
12V
L2
1μ
C4
220n
11
+V_B
IC2
TDA2545A
L1
9
47p
330n
8
REF. AMPL.
LIMIT AMPL.
L4 1μ
12V
C6
220n
2
C3
2n2
15
PCB11 TUNER PIN 1 Diagr.F
38.9 MHz
C5
1n
P2-5
5
2
4
3
6
IC1
SL1431
SW1
1
2
5
4
3
1
16
12
L3
4μ7
5.85 MHz
P1-2
P801-2 Diagr.Y
SIGNAL PROCESSING AGC
PCB11 TUNER SHIELD Diagr.F
P2-6
3
P1-1
P801-1 Diagr.Y
4 5 6 7 10 14 13
C1
220n
C8
220n
12V
R11
12K
C7
220n
D2
5V6
IC3 74HC02
P807-4 Diagr.Y
P4-4
MUTE
11
12
13
2
3
14
1
P807-1 Diagr.Y
P4-2
C1
P807-3 Diagr.Y
P4-3
C2
9
8
10
7
6
5
4
R2
820K
R4
150K
TR5
BC848C
2ND
P2-3
PCB11 IC1801 PIN 15 Diagr.F
R3
820K
R5
150K
TR6
BC848C
STEREO
P2-4
PCB11 IC1801 PIN 16 Diagr.F
PCB62 PG2957-5 Diagr.S
P3-1
19V
F1
200mAT
TR3
BC808-25
18V
P4-1
P804-5 Diagr.Y
R12
10K
PCB62 IC2901 PIN 3 Diagr.S
P3-2
12V
F2
100mAT
TR4
BC808-25
12V
R13
10K
R9
47K
R6
5K6
R7
5K6
R15
47K
TR7
BC848C
R14
47K
TR2
BC848C
N.C.
P2-2
R10
220K
R8
47K
TR1
BC848C
PCB21 IC505 PIN 11 Diagr.J
PCB21 IC505 PIN 6 Diagr.J
P2-1
NICAM ON/OFF
R16
100K
R17
1M
TR8
BC848C

DIAGRAM Y NICAM


8
* IN SYSTEM I
BP1 AND X1 ARE 6 552MHz
IC1 1B
TA8662N
QPSK DEMODULATOR
+VB (DIGITAL)
+VB (ANALOG)
AGC DET
AGC AMP
CH A DET
CH B DET
CAR-RIER VCO
ANA-LOGUE SWITCH
CH B AUTO SLICER DET
CH A AUTO SLICER DET
CLP VCO
WAVE SHAPER
5 824MHz CLP OUTPUT
728kHz CLP OUTPUT
S/H PULSE
DIVI-DER
APC DET
MUTE DET
DIFFE-RENCE LOGIC
PAR→SER CONVER-SION
PCM DATA OUTPUT
(DIGITAL) (ANALOG)
IC2 3B
CF70123
NICAM 728
DEMULTIPLEXER
MUTE DISABLE (TEST)
WORD SELECT
CLOCK
DATA
5 824MHz CLP
728kHz CLP
728 DATA
OSC
DRIVE
RESET
MUTE
IC4 3A
SAA 7320
DIGITAL FILTER & DA CONVERTER
4 X OVER-SAMP-LING & DIGITAL FILTER
INPUT STAGE
-12dB ATTENU-ATION
X 32 INTER-POLATOR
LEFT
RIGHT
REF
DEEMP R
L
R
V REF
8 192MHz
IC3 3B
PCF8574T
IO PORTS
SHIFT REGIS-TER
I2C BUS CONTROL
POWER ON RESET
READ WRITE
P FAIL
IC5 4B
4052
CONTROL
IC7 4558
AF LEFT
AF RIGHT
POWER SUPPLY
IC6 2A
LM3578
OSC
LATCH & DRIVER
2 X BC808-25
TR1 BC848B
TR2 BC848B
TR3 BF256A
TR7 BD535
TR8
TR9
TR10 BC848B
X1 5 85MHz
X2 16 384MHz
X3 5 824MHz
BP1 5 85MHz
P1-2 Diagr X
P1-1 Diagr X
PCB11 GROUND Diagr F
P801-2
P801-3
P801-1
P802-2
P802-4
P803-1
P803-2
P803-4
P804-1
P805-1
P807-7
P804-4
P805-8
P805-9
P805-3
P805-5
P805-6
P807-3
P805-7
P805-2
P805-4
P807-1
P807-2
P4-2 Diagr X
P4-3 Diagr X
P807-6
P807-5
P803-3
P803-5
PCB11 PG1801-3 Diagr F
PCB11 PG1801-4 Diagr F
P804-5
P804-6
P807-4
P804-3
P804-2
P802-1
P802-3
P4-1 Diagr X
P1-4 Diagr X
PCB11 R1825 Diagr F
PCB11 R1824 Diagr F
POWER FAIL
MUTE
5V
10V
18V

• = ARE ONLY MOUNTED IN THE SETS FIRST PRODUCED

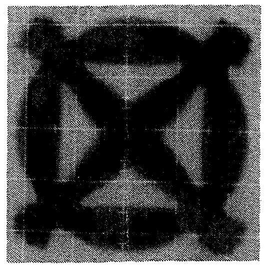
PCB 8, Nicam



ADJUSTMENT
NICAM system B/G and I

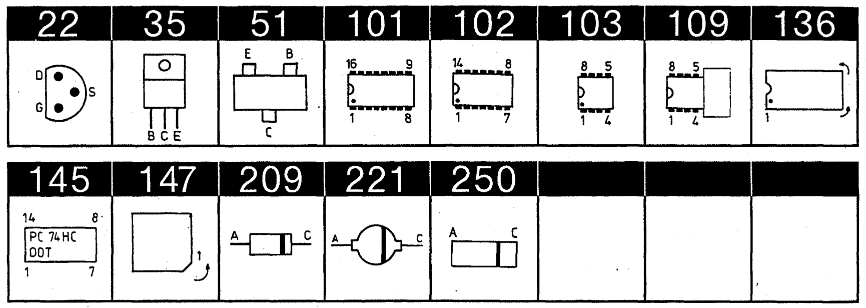
- Connect a NICAM aerial signal, B/G or I.
- Connect an oscilloscope capable of performing x-y deflection to 8L1 and 8L2, coordinate 1A, on the side facing towards 8C59, coordinate 1A.

Adjust by means of 8C34, coordinate 1B, (VCO frequency 5.85 MHz for system B/G or 6.552 MHz for system I). Adjust until the oscilloscope picture shown below has been achieved.



x = y = 0.2V/DIV

LIST OF ELECTRICAL PARTS



Resistors not referred to are standard, see page 3-12

PCB 8,
8007425 Nicam for Pal B/G
8007660 Nicam for Pal I

IC1	8341099	**136**	TA 8662N
IC2	8341159	**136**	CF 70123
IC4	8341174	**147**	SAA 7320
IC5	8341257	**102**	74HC4052
IC6	8341225	**103**	LM 3578
IC7	8341022	**103**	4558

TR1-TR2	8320615	**51**	BC 848B
TR3	8320830	**22**	BF 256A
TR7*	8320439	**35**	BD 535
TR8-TR9	8320609	**51**	BC 808-25
TR10	8320615	**51**	BC 848B

D1	8300656	**209**	BB 809
D2	8300345	**221**	BYW 36
D6-D7	8300482	**250**	BAS 32
D101	8300677	**250**	Z4.7V 5%
D102	8300482	**250**	BAS 32
D103	8300605	**250**	Z10V 5%

R31	5011527	12 kΩ 1% 1/8W
R32	5011600	100 kΩ 1% 1/8W
R33-R35	5011527	12 kΩ 1% 1/8W
R36	5011600	100 kΩ 1% 1/8W
R41-R42	5011600	100 kΩ 1% 1/8W
R46-R47	5011600	100 kΩ 1% 1/8W
R53	5020759	0.27 Ω 5% 1/4W
R100-R101	5011600	100 kΩ 1% 1/8W
R102-R103	5011839	180 kΩ 1% 1/8W

C1	4010166	100 nF -20+80% 50V
C3	4010166	100 nF -20+80% 50V
C4	4010157	10 nF 10% 50V
C6	4010176	10 nF -20+80% 50V
C7	4000240	56 pF 5% 50V
C8-C9	4000277	22 pF 5% 50V
C11	4010176	10 nF -20+80% 50V
C12-C13	4000282	180 pF 5% 50V
C15-C20	4010220	100 nF 10% 50V
C21-C23	4010176	10 nF -20+80% 50V
C25	4010176	10 nF -20+80% 50V
C27	4000281	82 pF 5% 50V
C29	4000345	1 nF 5% 50V
C30	4010220	100 nF 10% 50V
C31	4000278	27 pF 5% 50V
C32	4000277	22 pF 5% 50V
C34	4340034	7.5-50 pF
C35	4000286	470 pF 5% 50V
C37	4010172	3.3 nF 10% 50V
C38	4000241	100 pF 5% 50V
C39	4010220	100 nF 10% 50V
C40	4000286	470 pF 5% 50V
C41	4000241	100 pF 5% 50V
C42	4010172	3.3 nF 10% 50V
C43	4000234	47 pF 5% 50V
C44	4010220	100 nF 10% 50V
C46-C49	4200826	10 µF 20% 16V
C50	4000345	1 nF 5% 50V
C51	4000277	22 pF 5% 50V
C52	4200760	220 µF -10+50% 16V
C53	4200561	10 µF 20% 50V
C55	4000241	100 pF 5% 50V
C56-C59	4130228	470 nF 20% 63V
C60	4010166	100 nF -20+80% 50V
C62	4010166	100 nF -20+80% 50V
C63	4000275	15 pF 5% 50V
C100	4200826	10 µF 20% 16V
C112	4010220	100 nF 10% 50V
C115	4010220	100 nF 10% 50V
C116	4000234	47 pF 5% 50V
C117	4010220	100 nF 10% 50V
C118-C119	4000277	22 pF 5% 50V
C120-C123	4000234	47 pF 5% 50V
C124	4000345	1 nF 5% 50V
C125	4000234	47 pF 5% 50V
C126-C130	4000345	1 nF 5% 50V

*Specially selected or adapted sample.

L1-	8020747	Coil 1 mH 10%	L6	8020759	Coil 1 mH 10%
L2			L7	8020609	Coil 3.3 µH 20%
L3	8020772	Coil 10 µH 20%	L20	8020672	Coil 33 µH 10%
L4-	8020609	Coil 3.3 µH 20%	L30	8020609	Coil 3.3 µH 20%
L5					

X1	8090085	Crystal 5.85 MHz f/Pal B/G
	8090081	Crystal 6.552 MHz f/Pal I
X2	8090110	Crystal 16.384 MHz
X3	8090083	Crystal 5.824 MHz

BP1	8020734	Band pass filter 5.85 MHz f/Pal B/G
	8020735	Band pass filter 6.552 MHz f/Pal I

P801	7220710	Plug 3 pole	P804	7220713	Plug 6 pole
P802	7220711	Plug 4 pole	P807	7220714	Plug 7 pole
P803	7220712	Plug 5 pole			

PCB 9, 8004806
Nicam Sound Mixer for Pal B/G
8004807
Nicam Sound Mixer for Pal I

IC1	8341372	**109**	SL 1431
IC2	8340496	**101**	TDA 2545A
IC3△	8341169	**145**	74HC02

TR1-	8320747	**51**	BC 848C	TR5-	8320747	**51**	BC 848C
TR2				TR8			
TR3-	8320609	**51**	BC 808-25				
TR4							

D2	8300562	**250**	Z5.6V 2%

C1	4000287	220 nF -20+80% 25V	C5	4010132	1 nF 10% 50V
C3	4010170	2.2 nF 10% 50V	C6-	4000287	220 nF -20+80% 25V
C4	4000287	220 nF -20+80% 25V	C8		

L1	8020738	Coil 38.9 MHz	L3	8020551	Coil 4.7 µH 10%
L2	8020600	Coil 1 µH 10%	L4	8020600	Coil 1 µH 10%

F1	6600089	Fuse 200 mA 250V
F2	6600084	Fuse 100 mA 250V

SW1	8030162	OFW G9201 f/Pal B/G
	8030217	OFW J3250 f/Pal I

P1	7220725	Plug 3 pole	P3	7220724	Plug 2 pole
P2	7220728	Plug 6 pole	P4	7220726	Plug 4 pole

	6276463	Set of wire bundles

	3504416	Owners Manual

△ indicates that static electricity may destroy the component.

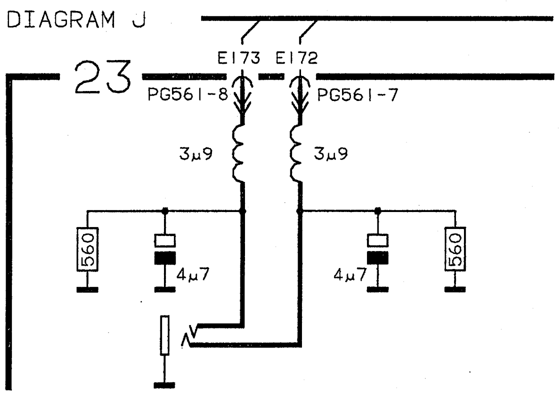
BEOCORD VX5000 CORRECTIONS

Diagrams

Page 2-23
Wire code no. F30 on diagram G must be D30.

Page 2-25
5Q13 on diagram I must be a PNP type, DTA124K.

Page 2-26



To minimize radiation, two capacitors (4µ7 part no. 4011022), and two coils (3µ9 part no. 8020649) have been added in the headphone output.

Page 2-28
Pin 2 (ground) on IC603, diagram L, must be pin 12.

Technical specifications

Page 1-2
Sound converter 6.5 MHz – 8003396.

List of electrical parts

Page 3-4
11C1541/1543/1556/1569 must be 4200903 10µF 16V Bipolar.

Page 3-10
Part no. SW IC 51IC3710 must be 8341653.

PCB51 and 51IC3701:
Please note, that if you order PCB51 or 51IC3701, it will be supplied without SW IC3710.

Insertion in the mechanical parts list

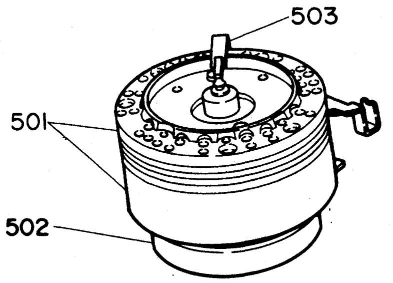
Page 4-1

101	3164867	Top cover, black
107	3168946	Front panel, black
111	3168944	Side panel, left, black
112	3168945	Side panel, right, black
159	3168949	Secondary door, black
165	3152818	Hinge, black

Transport mechanism assembly Exploded view

Page 4-4

501	8600109	Tape head, video head, complete
502	8400175	Motor f/video head
503	2819245	Ground spring



Electrical adjustments

Page 5-11

6. TUNING CIRCUIT

1. 15.6kHz Free-run

1) Connect a frequency counter to TP801 with ground to TP802 on PCB11.
2) Set the VTR in stop mode without feeding any signal.
3) Adjust RT801 on PCB11 until a reading of 15.625kHz ±100Hz is obtained.

The procedure is correctly described in service manual, no. 3538738 where the adjustment procedure is in german language.

Brief operation guide

Page 7-10

When introducing SW version 2.1 the following changes has occured:

This menu is removed

Operating guide	V.Tape
Move cursor:	<< >>
Select/accept:	PLAY
Exit:	STOP
Supply numbers:	0 - 9
Review options:	< >
Continue operating:	PLAY

These 3 menus have been changed to the following:

PROGRAMMING REMINDER

Timer record 20.00
Press PLAY when ready
or press STOP to cancel

Tape indexing completed
Insert index on tape:
press PLAY ▷ ③

Tracking
. . . . █. . . . .

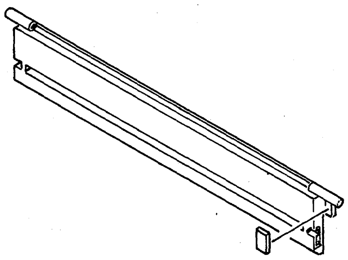
When using VX 5000 together with L/LX 4500/5500 or MX 3500/5500. After tuning the TV, all tuning data are automatically "dumped" into the VTR. This may take upto 2 minutes depending on the nos. of channels to be transferred. In this period operation should be avoided.

BEOCORD VX5000 REPAIR TIPS

Eject

Some cassettes are not ejected properly.

Solution:
Mount a spacer, part no. 2645051 on the cassette flap as shown.



Tuning do not catch/lack of synchronization

1) The VTR cannot catch any channels during search-tuning.

2) The VTR cannot catch any channels through direct selection.

3) The picture is intermittently unsynchronized.

Solution:
Mount a 100pF capacitor, part no. 4003128 in pos. C1459 on PCB71.

Timer-recording

The daily Timer-recording is only active on the 1st day.

Solution:
Replace 51IC3710 with SW version 2.1, part no. 8341653.

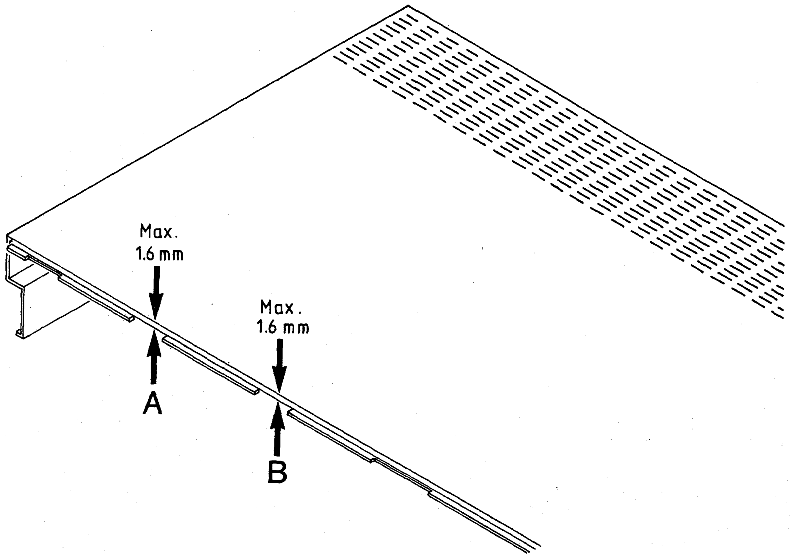
Front panel bends

The front panel bends at the top of the top cover.

Solution:
Replace the front panel and make the following modification in order to prevent that the fault reappears.
See the drawing.

File the grooves A and B until the height from the surface of the top cover to the bottom is max. 1.6 mm.

The modification has been introduced in the production as from serial no. 6943500.



Intermittent noise in A2 stereo

Solution:
Mount a 180ohm resistor in parallel with 11R1815 (coordinate 3D on PCB11).

Noise in NICAM stereo

Solution:
Change 8C55 from 100nF to 100pF.

The modification has been introduced in the production as from serial no. 08216137 for type 4531, and 08199588 for type 4539.

No sound

No sound from the VTR tuner in stop, record and tuner-only mode, when the VTR is connected to L/LX 4500/5500 or MX 3500/5500 TVs (only VTRs with NICAM).

Solution:
Cut the red wire mounted from 11IC1519 pin 9 to the Sound Mixer PCB.

The clock loses time

Cause:
1) Wrong reference frequency of 51IC701.

2) Operating error when checking the clock.

3) Frequent mains drop-out.

Solution:
1) Readjust the reference frequency according to page 5-14.

2) When checking the clock via the SET CLOCK MENU it is important to leave the menu by pressing STOP and not PLAY.
When PLAY is used the clock is set the exact minutes shown in the display and the seconds are cleared to zero.
At worst the clock will lose up to 59 seconds.

3) When the mains voltage is interrupted the seconds are deleted as well.

Interference in the colours

Interference in the colours when the VTR is placed under the TV.

Solution:
Change coil 11L307 from 820µH to 100µH (part no. 8020660).

Replacing 41IC701

After 41IC701 (Timer µP) has been replaced, the following must be made:

- Short-circuit 41C715 (coordinate 1G on PCB 41) for about 1 second (Reset).
- Adjust 15.6 kHz Free-run (11RT801) see page 11-2.
- Adjust 32.768 kHz osc. (41C714), see page 5-14.
- Test tuning.
- Set the clock.

Headphone output

Too high output level from the headphone socket.

Solution:
Change 41R792 and 41R794 from 22kohm to 120kohm.

The modification has been introduced in the production as from serial number 05997001.

No front operation

No operation after the front panel has been remounted.

Cause:
The black ground wire from the Stand-by-button to PCB11 is placed so that it runs between the Stand-by-switch 41S731 and the Stand-by-button.

Solution:
Change the position of the wire.

White edges in the picture

White edges after dark vertical images.

Solution:
Make the following modifications on the Y/Chroma PCB11:

1) Delete 11R214.

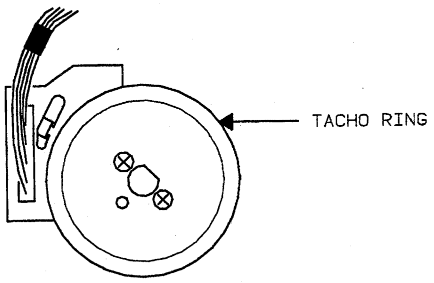
2) Connect pin 10 of 11IC201 to ground.

3) Add a 82pF capacitor on the copperfoil side in parallel with 11C209.

4) Connect collector and emitter of 11Q202 with a jumper.

Noise in picture or no picture during playback

When fitting the tacho ring at the bottom of the cylinder motor, please ensure that the magnet is positioned correctly in relation to the cylinder.
A small displacement causes noise in the picture, a 180° displacement causes no picture.
Check head switching point page 5-8 point 7.



07-91 3538789 To paste into SERVICE MANUAL – BEOCORD VX5000 (3538736-3538737-3538738)
or SERVICE MANUAL BEOCORD VX4000 (3538745)

Bang&Olufsen

Type 4560
B/G PAL/SECAM EAST modified
220V

Type 4561
B/G PAL/SECAM EAST modified
NICAM
220V

Type 4563
B/G PAL/SECAM EAST modified
VPS
220V

Type 4566
B/G PAL/SECAM EAST modified
NICAM
240V

Type 4567
B/G PAL/SECAM EAST modified
240V

Type 4568
I PAL NICAM
200V

Type 4569
I PAL NICAM
240V

Type 4535
PAL/SECAM L/B/G EAST modified
220V

Beocord VX5500

SERVICE MANUAL

INTRODUCTION

This supplement contains only the differences between:
VX 5500 type 456X and VX 4500 type 456X.
VX 5500 type 4535 and VX 4000 type 4535.

LIST OF PARTS

21D520	8300058	1N4148
41IC3710 (Type 456X)	8341805	27C512
41IC3710 (Type 4535)	8341806	27C512
PCB25	8004917	
101	3164761	Top cover, white
159	3168775	Secondary door, black

ADJUSTMENT ON PCB25

R11 should *not* be readjusted.

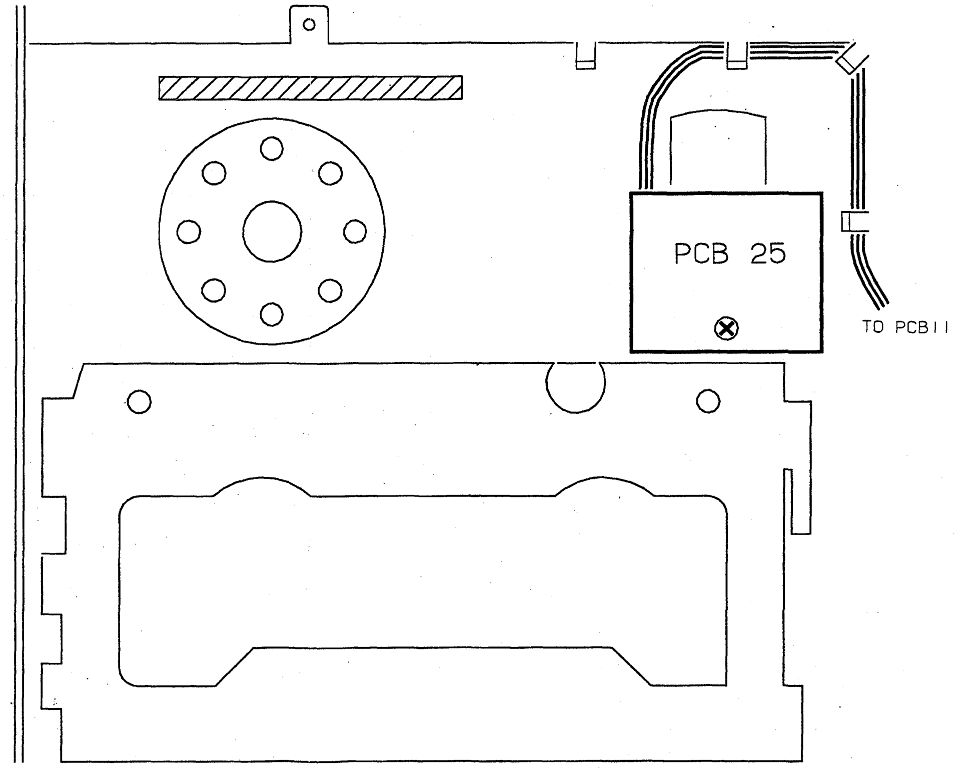
If adjustment is required, the following procedure may be applied:

Connect the video recorder to a 28" TV.

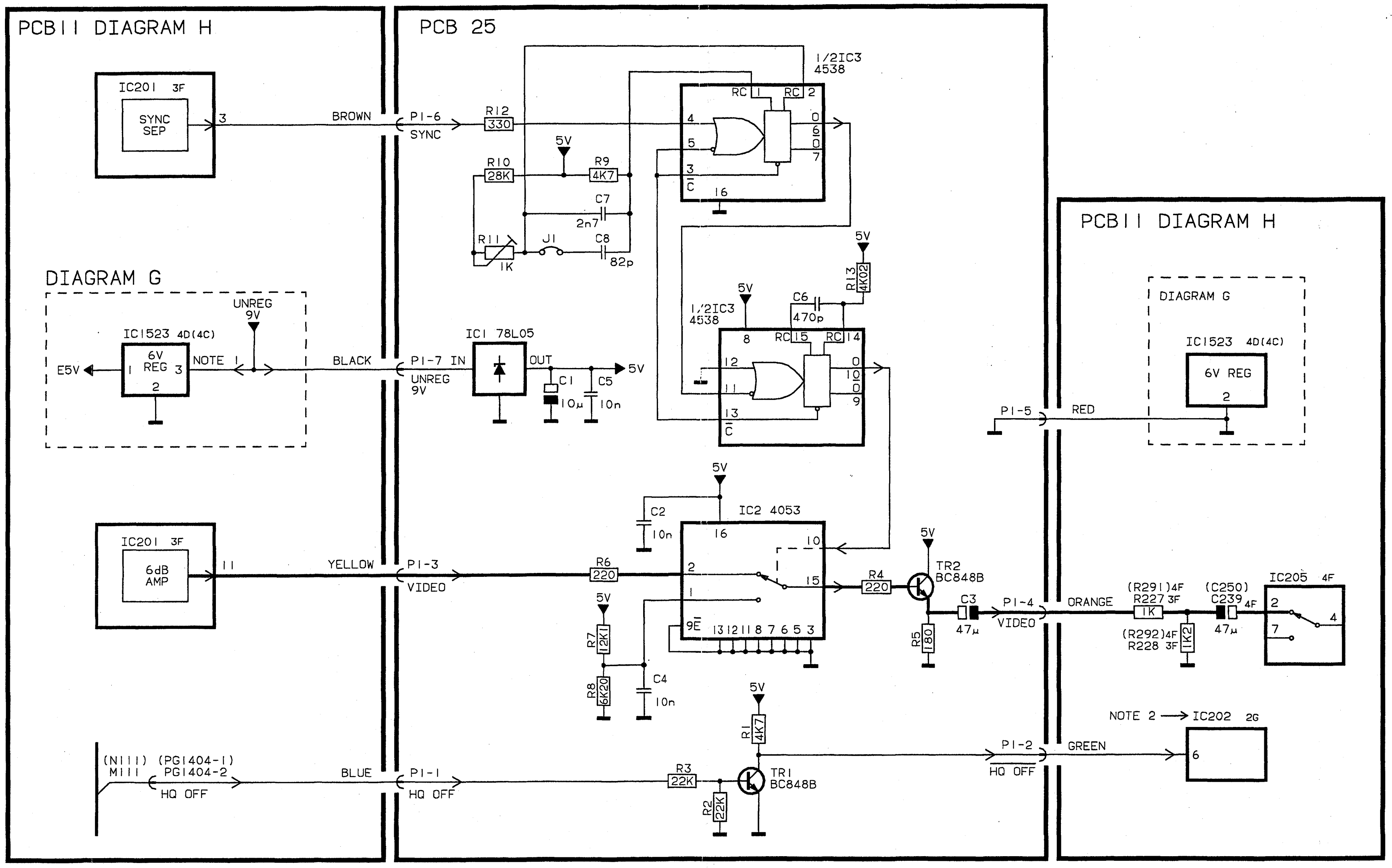
Play back a recording of the test pattern broadcast by a broadcasting network.

Adjust the horizontal amplitude of the TV until the black/white fields at the sides of the test pattern are completely visible.

Adjust R11 until the black/white fields at the right-hand side of the test pattern are 4 or 5 mm wide.



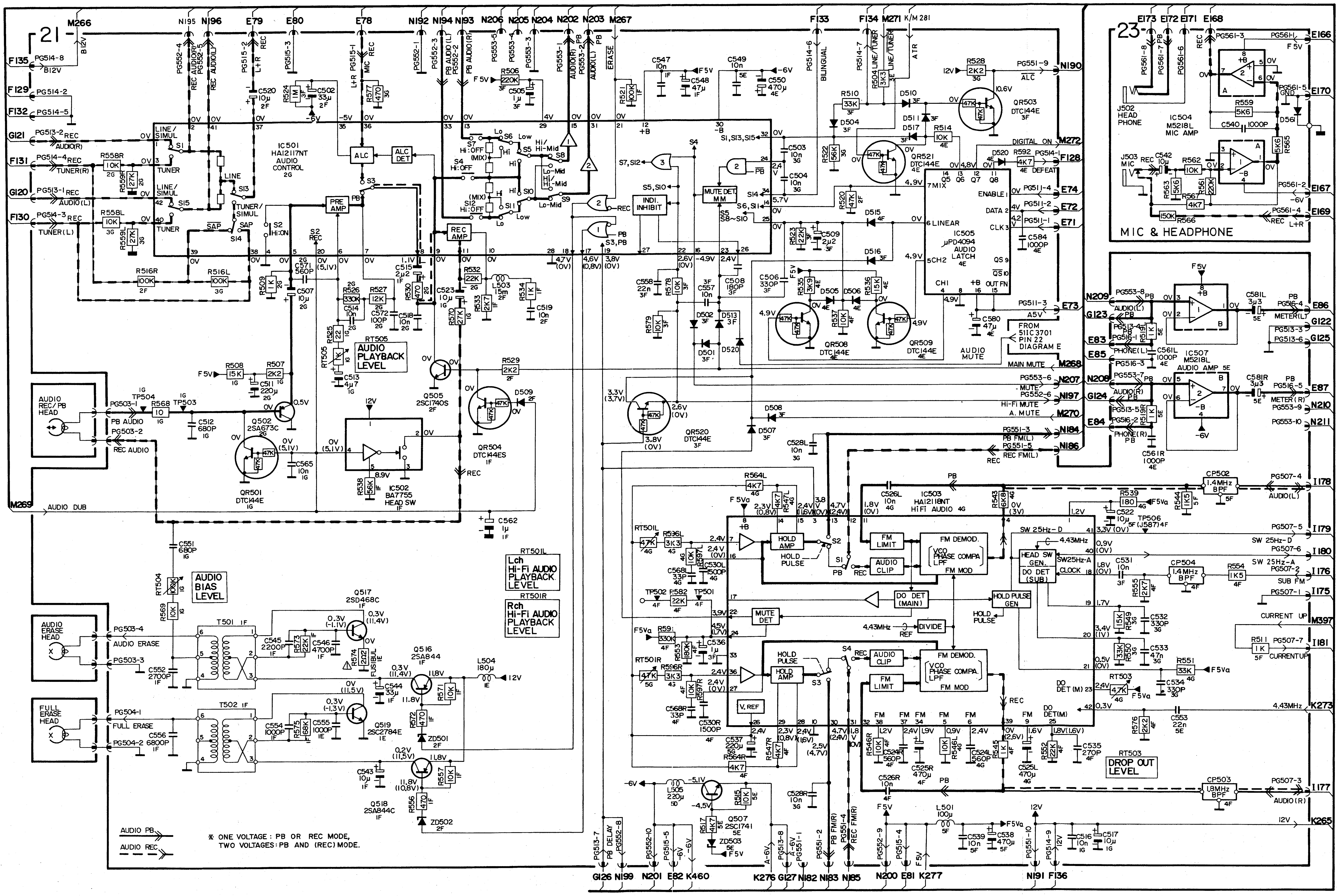
PCB25 with connections


PCBII DIAGRAM H
PCB 25
IC201 3F
SYNC SEP
3
BROWN
P1-6
SYNC
R12
330
R10
28K
5V
R9
4K7
C7
2n7
R11
1K
J1
C8
82p
1/2IC3
4538
RC
1
RC
2
4
5
3
C̄
16
0
6
0
7
DIAGRAM G
UNREG
9V
IC1523 4D(4C)
E5V
1
6V
REG
3
2
NOTE 1
BLACK
P1-7 IN
UNREG
9V
IC1 78L05
OUT
C1
10µ
C5
10n
5V
C6
470p
R13
4K02
1/2IC3
4538
8
RC 15
RC 14
12
11
13
C̄
0
10
0
9
PCBII DIAGRAM H
DIAGRAM G
IC1523 4D(4C)
6V REG
2
P1-5
RED
C2
10n
IC2 4053
16
10
2
1
15
9Ē
13 12 11 8 7 6 5 3
IC201 3F
6dB
AMP
11
YELLOW
P1-3
VIDEO
R6
220
R7
12K1
R8
6K20
C4
10n
R4
220
TR2
BC848B
R5
180
C3
47µ
P1-4
VIDEO
ORANGE
(R291)4F
R227 3F
1K
(R292)4F
R228 3F
1K2
(C250)
C239 4F
47µ
IC205 4F
2
7
4
NOTE 2 → IC202 2G
6
R1
4K7
(N111) (PG1404-1)
M111 PG1404-2
HQ OFF
BLUE
P1-1
HQ OFF
R3
22K
R2
22K
TR1
BC848B
P1-2
HQ OFF
GREEN

Designations in parenthesis are for type 4535.
NOTE 1: Pin 1 and 3 are swopped on the component print compared with the diagram.
NOTE 2: IC202 are called IC1202 on the component print (not in type 4535).

DIAGRAM J HI FI AUDIO

(Type 456X)


21
23
IC501 HA12117NT AUDIO CONTROL
ALC
ALC DET
PRE AMP
REC AMP
IC502 BA7755 HEAD SW
AUDIO PLAYBACK LEVEL
RT505
AUDIO BIAS LEVEL
RT504
Lch Hi-Fi AUDIO PLAYBACK LEVEL RT501L
Rch Hi-Fi AUDIO PLAYBACK LEVEL RT501R
AUDIO REC/PB HEAD
AUDIO ERASE HEAD
FULL ERASE HEAD
T501
T502
Q517 2SD468C
Q516 2SA844
Q519 2SC2784E
Q518 2SA844C
Q502 2SA673C
Q505 2SC1740S
QR501 DTC144E
QR504 DTC144ES
QR520 DTC144E
QR503 DTC144E
QR521 DTC144E
QR508 DTC144E
QR509 DTC144E
Q507 2SC1741
IC505 μPD4094 AUDIO LATCH
AUDIO MUTE
FROM 511C 3701 PIN 22 DIAGRAM E
MUTE DET MM
INDI. INHIBIT
IC503 HA12118NT HI FI AUDIO
HOLD AMP
HOLD PULSE
FM LIMIT
AUDIO CLIP
FM DEMOD. VCO PHASE COMPA. LPF FM MOD
HEAD SW GEN. DO DET (SUB)
DO DET (MAIN)
HOLD PULSE GEN
MUTE DET
DIVIDE
V. REF
DROP OUT LEVEL RT503
CP502 1.4MHz BPF
CP503 1.8MHz BPF
CP504 1.4MHz BPF
IC504 M5218L MIC AMP
IC507 M5218L AUDIO AMP
J502 HEAD PHONE
J503 MIC
MIC & HEADPHONE
AUDIO DUB
REC AUDIO
PB AUDIO
AUDIO ERASE
FULL ERASE

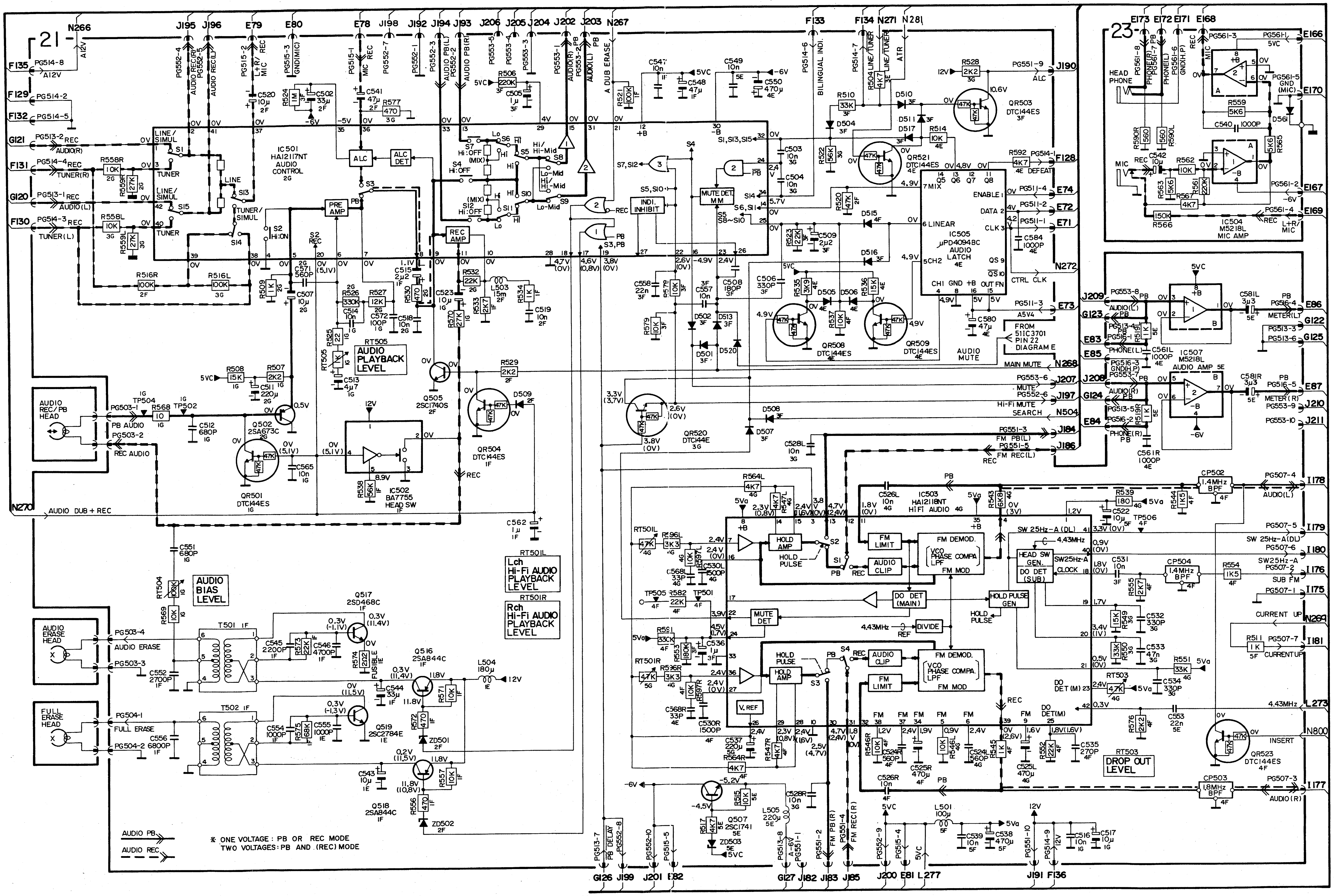
AUDIO PB

AUDIO REC

※ ONE VOLTAGE : PB OR REC MODE,
TWO VOLTAGES: PB AND (REC) MODE.

DIAGRAM K HI FI AUDIO

(Type 4535)


21
23
IC501
HA12117NT
AUDIO CONTROL
2G
ALC
ALC DET
PRE AMP
REC AMP
LINE/SIMUL
TUNER
MUTE DET MM
INDI. INHIBIT
IC505
μPD4094BC
AUDIO LATCH
4E
QR503
DTC144ES
QR521
DTC144ES
QR508
DTC144ES
QR509
DTC144ES
QR520
DTC144E
AUDIO MUTE
FROM 511C3701 PIN 22 DIAGRAM E
IC504
M5218L
MIC AMP
HEAD PHONE
MIC
IC507
M5218L
AUDIO AMP 5E
AUDIO REC/PB HEAD
PB AUDIO
REC AUDIO
Q502
2SA673C
QR501
DTC144ES
IC502
BA7755
HEAD SW
Q505
2SC1740S
QR504
DTC144ES
RT505
AUDIO PLAYBACK LEVEL
AUDIO DUB + REC
RT504
AUDIO BIAS LEVEL
Lch
Hi-Fi AUDIO PLAYBACK LEVEL
RT501L
Rch
Hi-Fi AUDIO PLAYBACK LEVEL
RT501R
AUDIO ERASE HEAD
AUDIO ERASE
T501
Q517
2SD468C
FULL ERASE HEAD
FULL ERASE
T502
Q519
2SC2784E
Q516
2SA844C
Q518
2SA844C
ZD501
ZD502
IC503
HA12118NT
Hi-Fi AUDIO
HOLD AMP
HOLD PULSE
FM LIMIT
FM DEMOD.
VCO PHASE COMPA. LPF
FM MOD
AUDIO CLIP
MUTE DET
DO DET (MAIN)
DIVIDE
HEAD SW GEN.
DO DET (SUB)
HOLD PULSE GEN
V. REF
CP502
1.4MHz BPF
CP504
1.4MHz BPF
CP503
1.8MHz BPF
RT503
DROP OUT LEVEL
QR523
DTC144ES
Q507
2SC1741
ZD503
AUDIO PB
AUDIO REC
※ ONE VOLTAGE : PB OR REC MODE
TWO VOLTAGES : PB AND (REC) MODE